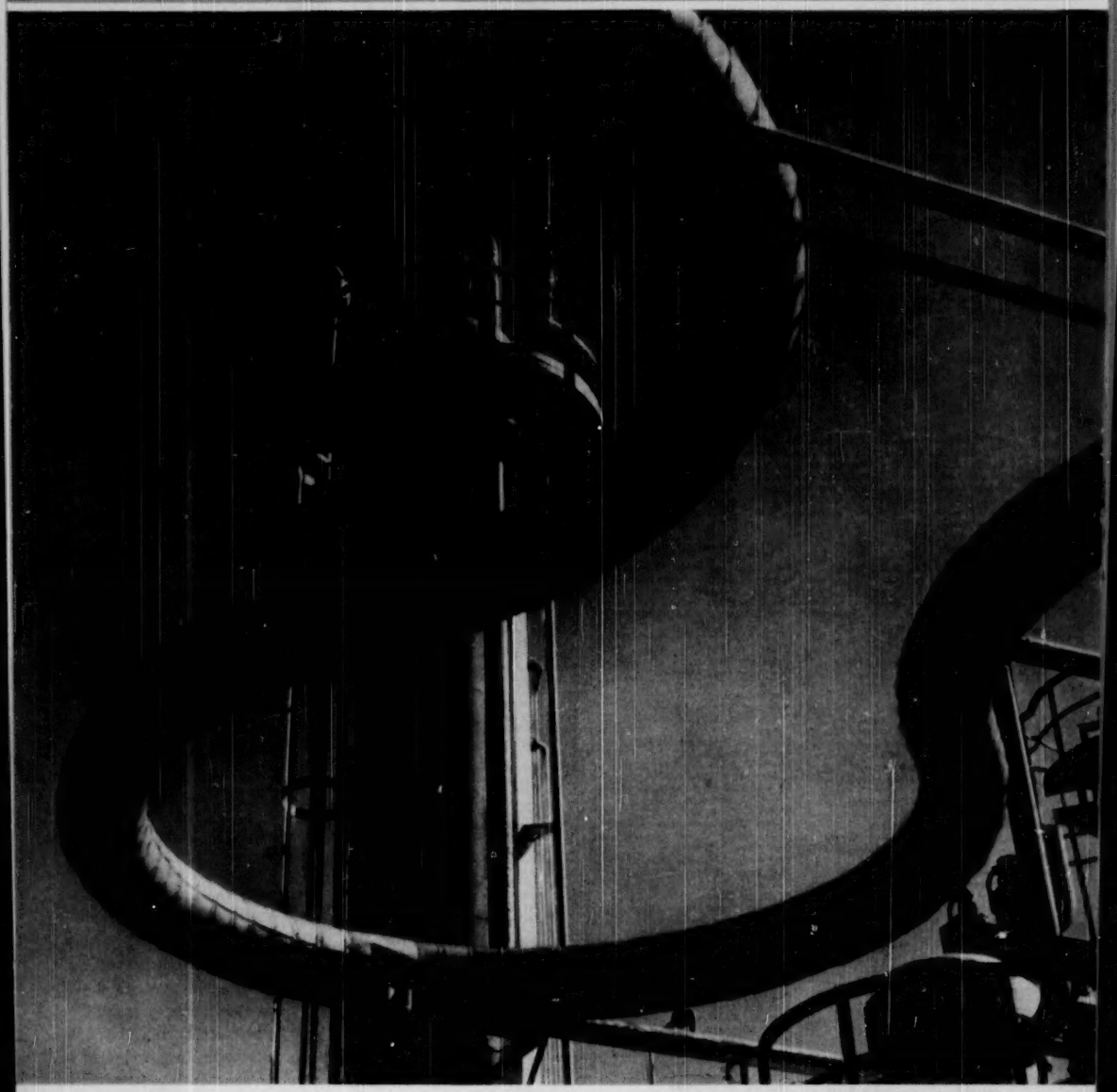
Standardization

News Magazine of the American Standards Association, Incorporated



FEATURED —

Ball and Roller Bearings

Pressure Piping

The SAE

International News

FEBRUARY 1950

In Two Parts — Part I

American Standards Association

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Company Members—More than 2100 companies hold membership either directly or by group arrangement through their respective trade associations.

Marginal Notes

Caquot and the ISO—

With election of its new president, the International Organization for Standardization makes an auspicious start on its second three years. The stature of the man selected—Albert Caquot of France—makes him a worthy successor to the man he replaces—Howard Coonley of the United States (page 45). His record promises much

for the success of the Organization under his leadership.

The American Standards Association joins with the other ISO members in wishing M. Caquot a most successful term in office. The ASA hopes that in 1953 when he looks back on his expired term he will find that during those three the countries of the world will have developed a closer working understanding in this important field of standardization.

Standardization and the Automobile Industry—

The automotive industry has long been the symbol of successful use of mass production and standardization techniques in the United States. In this issue, the Society of Automotive Engineers describes its services to the industry as the central technical body for coordination of the industry's viewpoint in scientific and technical matters as well as in the development of national standards.

Ball and Roller Bearings—

Although the article on page 38 emphasizes the service to inspectors of the new American Standard Gaging Practice for Ball and Roller Bearings, this standard is significant for another reason. It represents the first in a series of American Standards now under development which provides a comprehensive standardization program for antifriction bearings—including terminology, dimensions and an identification system. The rest of the series will be along sometime during the summer.

Our Front Cover

The graceful curve of pipe is a steam expansion loop at the Tomball gasoline plant in Texas. A distillation unit is shown in the background. Widely accepted are the practices outlined in the American Standard Code for Pressure Piping. A completely revised edition of this code is scheduled for publication in 1950. For story on the new code, see page 40 of this issue. *Cover photo by Bubley, Standard Oil Co., of New Jersey.*

Opinions expressed by authors in STANDARDIZATION *are not necessarily those of the American Standards Association.*

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Standardization is dynamic, not static. It means not to stand still, but to move forward together.

In This Issue

Featured—

News—

ASA Standards Activities—

Part 2—Index to Volume 20, January through December, 1949.

ASA

Reg. U. S. Pat. Off.

Ruth E. Mason, Editor Dollie Carpenter, Production Editor

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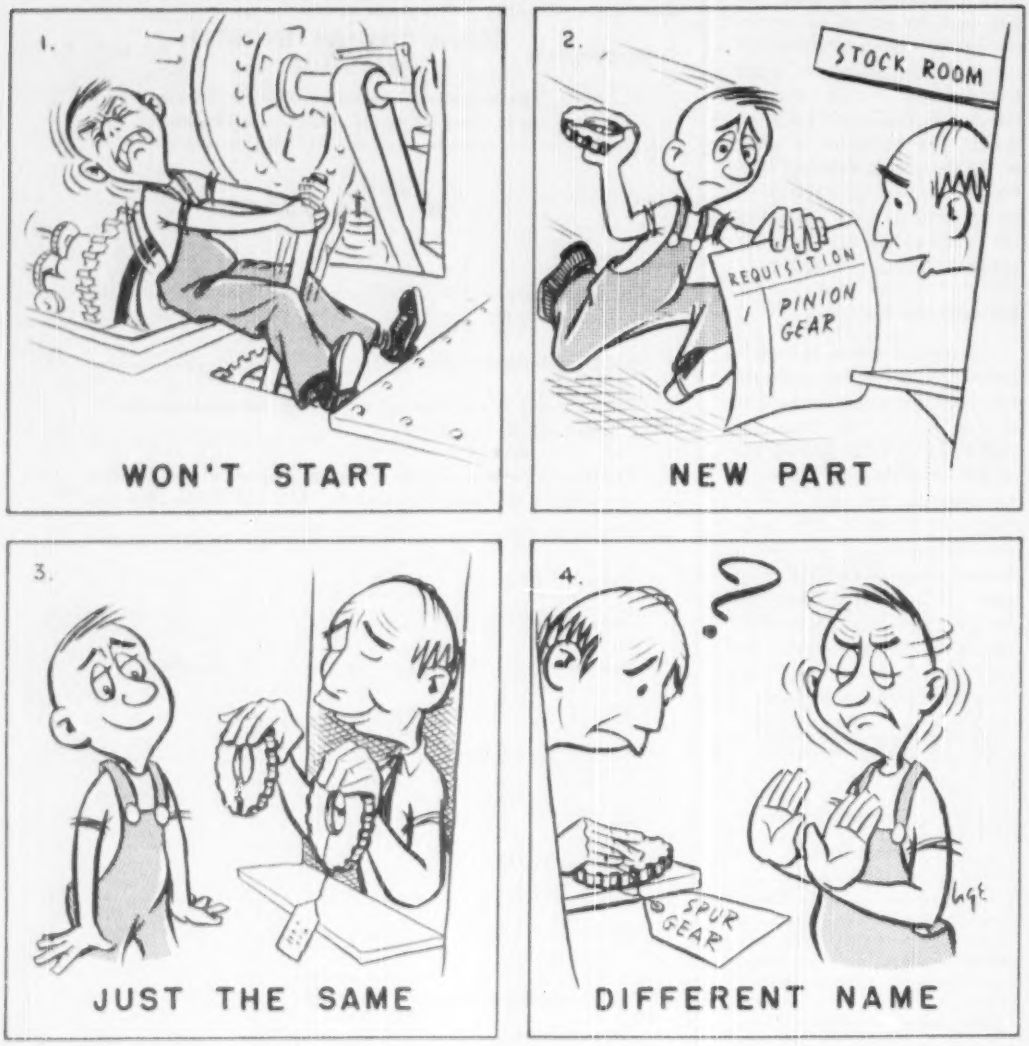
Standard Terminology might help...



Development of standard commodity classification systems has been discussed extensively in recent years, particularly as a result of the need for greater control of stock parts and materials during the war. The Bureau of Federal Supply has been making extensive studies of the subject as have the Munitions Board and individual industrial establishments.

While it is unusual for STANDARDIZATION *to publish articles concerning products offered for sale, or services provided by individual companies, the importance of standard commodity classification systems in themselves and as an aid to further standardization operations in industry has tipped the scales in favor of this article. Prepared by the Remington Rand Corporation, it indicates what can be accomplished in this field. In publishing the article,* STANDARDIZATION *does not indicate any special support of the particular system used by the Remington Rand Corporation.*

For Better Stock Control—

Remington Rand explains how its classification system simplifies the control of stock parts and materials.

THE history of Remington Rand's Commodity Classification Department started when war-expanded government agencies began thinking in terms of possible solutions to their numerous housekeeping headaches. It was immediately obvious that this job was going to be a tremendous one and the U. S. Navy, in recognition of this fact, turned to private business for help with the huge task.

In response to this call, the Remington Rand Commodity Classification Department was born.

Although the original assignment was confined to assisting the Navy in cleaning up its swollen supply system, it has since spread throughout the military establishment. There are several other firms involved in the gigantic job of removing confusion and duplication from military stock record keeping, stocking, and procurement, but so far Remington Rand is unique in its offer of a commercial version of this important service.

When the department's material control and classification systems are placed in effect, similar items are grouped together in the stock record or catalog. Duplication of items in these records is eliminated. Each item can be readily and completely identified. By means of accurate nomenclature and significant numbers, all items are arranged in a logical order of types and characteristics . . . and standardization can follow with a bare minimum of time and cost. Let us see how this is accomplished.

Some Typical Cases

Probably the easiest way in which an understanding of the Commodity Classification Department's operations can be gained is to consider some typical cases, what was done about them, and just what results were obtained. With this in mind, a look at this organization's industrial approach is in order.

When the engineers of this unit first begin to study an industrial problem, they do so from the standpoint of one single vital result which must be obtained . . . and that is an accurate material control system. With this one over-all result in mind, these engineers can make their actual approach to the problem from a number of different directions.

The fact that existing reports to management are inadequate for planning purposes could well be the starting point in a survey which ultimately reveals the need for a new and improved stock number. Unsatisfactory methods of accounting for raw materials or purchased production parts could turn up the need for complete reclassification by the time the engineer had completed his survey. A tie-up of a very large investment in inventory almost always leads to the uncovering of the necessity for a tighter system of controls. The most common starting point for a job of commodity classification is found, however, in the parts themselves.

A typical example of a good starting point for the consideration of the accuracy of a classification system was uncovered in a recent job done by the department. The offending part was a simple little spur gear.

In the first meeting with this gear, it went by the name "Driving Gear" and its stock number was 14-015-10. So far, so good. The next time it popped up, although it was still the same gear, it answered to the name "Pinion" and its stock number had changed to 14-04-14!

Once again the identical gear came up. This time it was known by the name it should have had all along, "Spur Gear." Unfortunately, however, the stock number had gone through another shuffle and was now 14-014-22!

It would seem that this particular gear had caused enough trouble but, as it turned out, this was not the case. It came into the limelight twice more before it gave up! To its already imposing collection of names were added two others, "Impeller," and "Intermediate Gear"!

Before this particular class of material had been completely screened, a further difficulty came up. According to the available records, Spur Gear No. 14-014-14 was four times the size of Spur Gear No. 14-014-14!

Still another actual case turned up a common ordinary washer masquerading under a total of 57 different names . . . ring, bushing, collet, grommet, spacer, etc!

The interesting feature about this great variety of names is that they are all correct . . . from an engineering standpoint. The fact that a name is technically a good one, however, does not automatically mean that it is a good name for stock number assignment, for record keeping, and for stocking. This may be illustrated by looking at our gear once more.

If a gear which operates between two other gears enters a material system as an intermediate gear, a gear which drives a rack enters as a pinion and a gear which drives another as a driving gear, these gears, even if identical, will receive three different stock numbers, be binned in three different locations and be carried in three different sets of records. This is a result of assigning names and, therefore, numbers also based solely on the usage of the part.

If our gear is called a spur gear . . . what it *is* rather than what it *does* . . . it will receive the same name in each case, the same number, be found in one and only one bin and be carried on only one record. This is provided that identification requirements for any item entering the system are such as to preclude the possibility of its failing to match up with an identical item which is already in the system.

The Commodity Classification Department offers a number of answers to the parts problem—either singly or in any desired combination. The most important of these answers lies in the development of standard nomenclature and sound stock numbering systems.

The experience of these engineers is such that they can immediately spot a name which will cause trouble in the industrial supply and purchasing operations. They select a new name as the standard—one which is based on the true nature of the part rather than just its usage. They exchange poorly defined trade names for sound descriptive names. Through this selection of standard nomenclature the basis for a sound stock numbering system is thereby established.

Studied Stock Numbering System

This organization has made a comprehensive study of over 25 basic stock numbering systems. The Dewey decimal system and the Hicks system have been carefully considered. Many variations on these two sys-

tems have been covered in this highly specialized type of research. Various library systems have been under the microscope. The advantages and disadvantages of arbitrary systems have been thoroughly investigated. The engineers who have weighed the pros and cons of all of these systems are in a position to develop stock numbering systems for any application—flexible systems that will not break down with expansion.

At this point, another vital phase of this service's work comes up in the preparation of cross-reference files.

The mere fact that a new and better system of nomenclature and stock numbering has been developed for an organization does not mean that old names and numbers will not continue to come up. Orders will still come in for some time which carry an old name or an out-of-date number. The foreman who has asked for a "2435-J" for the last few years will not suddenly begin asking the storekeeper for a "10-17-113."

In order to insure that the normal course of business is not brought to a standstill while everyone busies himself learning the new system, cross-references must be built. The

engineers who develop nomenclature and assign stock numbers build this file as they go along. In it, all old or colloquial names are referred to the correct or standard name. Old stock numbers are referred to new numbers. In this manner business can go on without inconvenience due to the new classification system.

The numerous savings—big savings—which can come from straightening out a tangle involving small parts are truly amazing!

Putting the parts house in order invariably cuts down the number of indispensable people in what should really be a routine operation. No more is old Joe Jones in the stock room the one man that the business can't operate without. The stock room is now in order and old Joe, who used to carry it all around in his head, is strictly out of order.

Economies of space and time are also to be gained from the operation of a classification program which is thoroughly planned and carefully executed—storage requirements go down and so does the time required for the routine supply and procurement operations. Volume procurements are established through the elimination of duplication, and the paper work of supply is greatly simplified. Executives are freed from the necessity of making decisions on matters which really should be handled as routine.

Savings by Navy Department

Before considering specific examples of savings from the industrial viewpoint, it may be interesting to look at what material control as established by the Commodity Classification Department has done for the Navy Department electronics picture. Although the astronomical figures involved are not analogous to any given industrial situation, the facts are interesting in their own right.

Briefly, the program for Navy electronics involved the complete identification of all electronic parts and the establishment of allowances of any given part required in the maintenance of the electronic equipment aboard a particular ship. These allowances were based upon the number of times a single part appeared in the various equipments plus the consideration of the normal life to be expected from the part.

The arrangement which this system replaced was based upon the procurement of spare parts in boxes which went with each equipment. An individual manufacturer who built, for example, a radio transmitter would supply in spare parts boxes all of the parts which were required to maintain his equipment. Other manufacturers did the same for their equipments.

In this fashion, a ship would end up carrying twelve of a certain type capacitor for a radio transmitter, five of the same type capacitor for a radio receiver, and seven more for a radar repeater. Since these repair parts allowances were not considered as a group, the ship would be carrying enough spares for *each* equipment to take care of everything from floods to earthquakes—which were hardly likely to strike every equipment simultaneously!

The establishment of these repair parts allowances served to cut down tremendously on the initial procurement of spare parts which went aboard the ships and into the supply depots every time a new equipment was purchased by the Navy. Just how far such savings went may be seen by comparing the before and after costs for the repair parts for a Navy teletype converter.

Before this program of identification and allowances had operated, the cost of the parts to the Navy—and thus to the taxpayers—was exactly $1,102,809. Money like that will buy quite a few parts, electronic or otherwise.

After the program had progressed far enough to include this particular equipment, the cost for repair parts dropped slightly—by $1,022,354!

There is another view from which this program may be considered. That view is the consideration of an individual ship with many different types of equipment aboard. An excellent sample case is in the record right now—that of a submarine.

When the repair parts were removed from the parts boxes and binned in the electronics storeroom for common parts which was set up by this program, it was found that the space and weight requirements for electronic repair parts had altered somewhat.

The total number of items carried by this particular ship was reduced from 9,000 to 2,300!

The weight of repair parts had dropped from 2,800 pounds to 400 pounds!

The space required for the storage of these items went from 165 cubic feet to 30 cubic feet!

This case, incidentally, was the example used in the presentation of this program to Congress. Actual photographs of the parts required, before and after, were shown and turned out to be extremely effective. It wasn't hard to translate these savings from terms of submarines into those of battleships and the aircraft carriers.

Industrially, the picture can be just as bright even though it is on a smaller scale. The sample in this case happened to involve a problem of maintenance.

Reduce Inventories 20 Percent

The survey by the commodity classification engineers turned up some very interesting results—specifically, it showed management how they could reduce their inventories by almost 20 percent! Through the reduction of paper work and the addition of firm maintenance control and

"... storage requirements go down."

stock control, plus the inventory reduction mentioned above, this company was able to reduce annual operating costs by over 16 percent! To them, this meant an annual saving of over $150,000. It's figures like these that can be counted on to buy contented stockholders!

The problems brought on by a lack of standard nomenclature and a sound numbering and classification system do not confine themselves to any particular type of business. They are amazingly widespread throughout American industry today.

As an example of this, the next case history involves a totally different type of organization. The Commodity Classification Department engineers who handled this job found that this company had purchased a ball bearing for maintenance use.

This same bearing was carried in the company's files as "Bearing, thrust," "Bearing, shaft," "Bearing, pillow," "Bearing, end plate," "Bearing, camshaft," and "Ball bearing!" The stock numbers for this one bearing were 26-473-3, 26-403-47, 26-462-21, 26-455-34, 26-405-14, and 26-440-50!

This is by no means a unique situation. To carry the examples a little further afield, we can consider the situation of a third type of industry for which this department did a recent job. Incidentally, this particular job did not call for any detailed development of interchangeability of parts. Such a development was not included because the officials of this company were most definite in their statement that no duplication existed in *their* stock control set-up. All that was wanted was a good classification system that was more flexible than the one currently in use.

Considering the qualifications in force as to what this job was *not* to cover, the commodity classification engineers were most interested to discover that Valve, safety, No. 2715-B; Valve, pop, No. 2736-7; Valve, check, No. 2794-65; Valve, angle lift check, No. 2768-8; Valve, control, No. 2796-4; Valve, lift check, No. 2743-65; and Valve, relief, No. 2753-98 were practically identical!

Needless to say, this discovery brought on a slight change in the management psychology of this particular organization and this change was followed quite closely by another change, this time in operational requirements for the classification job, and it paid off!

The starting point of the Commodity Classification Department lies in a survey of the existing situation when tackling such problems. The Engineering Department of this unit supplies the men for these jobs, all highly qualified and thoroughly trained in the art of what to look for, where to find it, and what to do about it when found.

Data Files Important

These surveys have the advantage of an unbiased point of view. The outside approach is usually the fastest path to a solution of local problems—and classification problems are no exception. This practical approach is backed up by a constant program of research into problems of classification and various methods for their solution. In addition to this research program, this group is constantly adding to one of the most impressive data files found anywhere today in the field of service work. This file is composed of thousands of manufacturers' catalogs, specifications from both government and industry, standards published by various industries, complete lists of patent classifications, etc. It provides some very useful short cuts in the establishment of classification and numbering systems.

This survey by the engineers of the Commodity Classification Department results in specific recommendations as to just what is needed. A firm proposal shows what should be done, how it should be done, and what is to be expected in the way of results. There is no vague theorizing—instead, concrete facts and examples are used to demonstrate each recommendation and to prove its worth.

These surveys are also valuable as an audit of a system which seems to be functioning well. The Commodity Classification Department likes to argue with success. "An existing system for doing the job," say the engineers of this unit, "does not prove that it can't be done better, faster, and cheaper!"

Appointments to Electrical Standards Committee

The American Institute of Electrical Engineers has announced new appointments to the Electrical Standards Committee. Now representatives are: John Grotzinger, manager, electrical engineering division, Goodyear Tire and Rubber Company, Akron, Ohio; F. E. Harrell, manufacturing vice-president, Reliance Electric and Engineering Company, Cleveland, Ohio; and J. J. Pilliod, assistant chief engineer, American Telephone and Telegraph Company, New York City. Harrell and Pilliod formerly were alternates.

New alternates appointed by the AIEE are: H. E. Farrer, American Institute of Electrical Engineers, New York City; I. W. Gross, electrical research engineer, American Gas and Electric Service Corporation, New York City; and E. B. Paxton, standards division, General Electric Company, Schenectady, New York.

G. Truman Reeves, formerly liaison member of the Armed Services Electro Standards Agency, Fort Monmouth, New Jersey, has been appointed a voting member.

Another new alternate member, appointed by the Radio Manufacturers Association, is D. D. Israel, vice-president, engineering and production, Emerson Radio and Phonograph Corporation, New York City.

Dr George S. Rice

Dr George S. Rice, who had been chief engineer of the Bureau of Mines for twenty-seven years, died January 4 at Takoma Park, Maryland, after a long illness, at the age of 83.

Dr Rice was well known for his work on mine safety and especially for his work on the prevention of coal dust explosions in which he had an international reputation. He took a major part in the development of the American Standard for Rock-Dusting Coal Mines which has been in extensive use throughout the country for many years.

• • It is reported in *Noma Forum*, journal of the National Office Management Association, that a new column, The March of Standards, will be a monthly feature in the magazine. Standardization news will be recorded alternately by George Vanderbilt, chairman of the ASA X2 Office Standards Project, and Tom McDonough, national chairman of the NOMA Office Standards Committee.

Society of

THE membership of the Society of Automotive Engineers has been likened to a great mine in which is concentrated the engineering brains and experience of the nation's motor vehicle, aeronautical, tractor, diesel, highway, and air transportation industries. Function of the SAE Technical Board and the thirty-odd working technical committees, through which it operates, is to exploit this mine of technical know-how in SAE standards-making activities, in the interests not only of the great industries from which the SAE draws its membership, but also of the public generally and its government.

The problems on which SAE technical committees work are so diverse that they are hard to classify, except that they present questions of broad industrial concern which can only be solved by cooperative action.

To illustrate, consider screw threads. Through its Screw Threads Committee, SAE represents the views and needs of our automotive industries in national and international screw thread standardization work. The major changes approved in the latest revision of the American Standard for screw threads which were incorporated in the recent agreement to unify the screw thread practice of Canada, Great Britain, and the United States, arose largely from the needs of the automotive industry. These changes mean that threaded parts will always assemble with a clearance, something of vital importance in mass production if delays due to seizures under high-cycle wrenching are to be avoided.

Another illustration of the work SAE technical committees do is the list of SAE Aeronautical Materials Specifications. There are over 400 of these, each covering a different material and each drawn to meet the very special requirements of the aeronautical industries. Practically every aircraft engine and propeller produced in this country is made of materials purchased under SAE Aeronautical Materials Specifications and, to an increasing degree, these AMS are being used to purchase the materials going into airframes. These specifications represent a tremendous simplification of the difficult material problems of the aeronautical industry and result in untold economies to the industry.

A new job tackled by SAE for the aeronautical industry and the military services is the creation of standards for aircraft engine and propeller utility parts. These standards, covering parts such as hex head bolts, steel dowel pins, high-temperature rivets, and O-ring seals, are the outgrowth of an Air Force-Navy-Industry agreement. Well over 100 have been released and are already in use.

"Seven Figure" Economies

In the ground equipment field SAE iron and steel, nonferrous and nonmetallic materials committees likewise simplify material supply, and by such simplification permit economies which run into seven figures annually. The work is carried on with the close and enthusiastic cooperation of the steel producers since they regard it as being as beneficial to them as it is to the automotive industry.

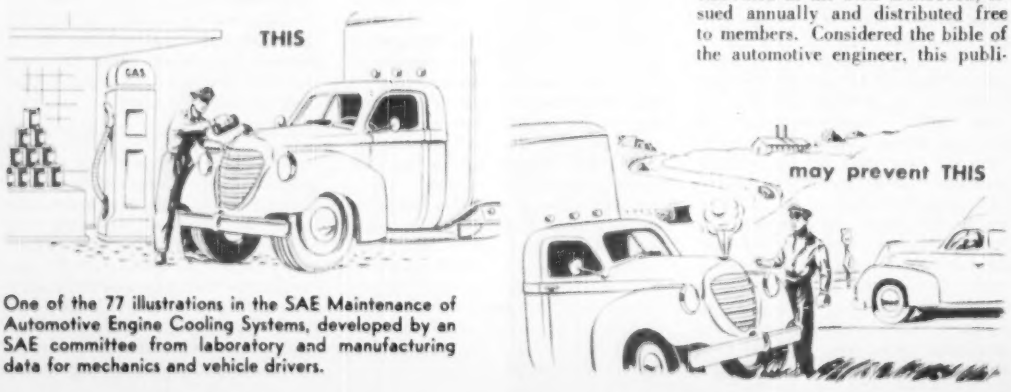
SAE's Iron and Steel Technical Committee, with the cooperation of the American Iron and Steel Institute, made an outstanding contribution last year in the form of standard hardenability bands for alloy steels. These hardenability tests bring engineers much nearer to the long sought-after method of specifying steel according to desired end result rather than solely by chemical composition.

Engineers responsible for the operation of commercial vehicle fleets also participate actively in SAE technical committees. One job completed by this group several years ago is the writing of the SAE Manual on Maintenance of Automotive Engine Cooling Systems, of which more than 148,000 already have been distributed. This Manual has proved useful to the motoring public as well as to vehicle fleet operators and automotive manufacturers.

Currently one of the projects being tackled by this group is the development of transportation engineering formulas. Aim here is to provide commercial vehicle users with formulas with which to appraise performance of vehicles and powerplants to choose the vehicles best suited to the peculiarities of a particular operation.

The work of the SAE Lighting Committee provides a good example of the service SAE technical committees render to governmental regulatory agencies. Motor vehicle lighting equipment has required state approval for many years. When this requirement was first established, each of the states set up their own specifications and the result was a chaotic condition of conflicting requirements. The SAE was requested to assist in developing specifications which the states might use and, as a result, the states generally base their approval on compliance with SAE specifications. This has resulted not only in uniformity but also in a continuous improvement in the quality of lighting devices, since SAE specifications are continually being revised to keep them in step with progress.

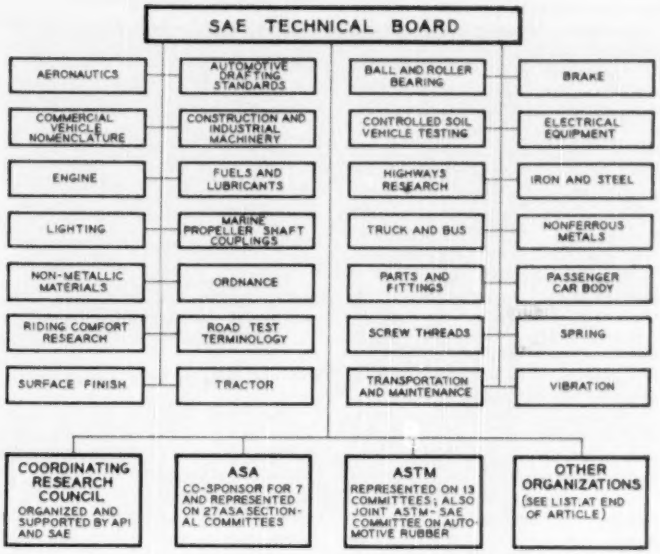
These and many other SAE standards and recommended practices are embodied in the *SAE Handbook*, issued annually and distributed free to members. Considered the bible of the automotive engineer, this publi-



One of the 77 illustrations in the SAE Maintenance of Automotive Engine Cooling Systems, developed by an SAE committee from laboratory and manufacturing data for mechanics and vehicle drivers.

Automotive Engineers

Serves Air and Ground Vehicle Industry, Public, and Government Via Standards



cation contains dimensional standards, performance specifications, materials specifications, classifications or nomenclatures, and testing methods. In 1949 the *Handbook* went through its most extensive annual expansion and revision in its 39 years, indicative of the intensive technical committee activity during the previous year.

The SAE Technical Board functions as the agent of the SAE Council and its job is to supervise and direct the technical committee work of the Society and the Society's participation in the technical committee work of other organizations. To carry on its work, the Board currently has some 30 technical committees. Most of these are standing committees but there are usually a few appointed to handle specific projects, which are disbanded when these projects are completed. All reports of technical committees are reviewed by the Board which has power to issue them in the name of the Society.

20 Members on Board

The Board itself is appointed by the President of SAE with the approval of the Council. It consists of about 20 members, each appointed for a three-year term, with terms arranged so that about one-third of the members retire each year. Members of the Board are not eligible for re-appointment until after the lapse of one year.

The practice of the Board is to appoint a sponsor from its membership for each technical committee. This sponsor acts as a direct connecting link between the Board and the particular committee. He has power to approve changes in committee personnel except that the personnel of a newly organized committee must be approved by the Board. If the Board does not appoint a sponsor, then the chairman of the committee has power to make personnel changes. Committee chairmen, incidentally, are elected each year by vote of the committee, subject to confirmation by the Board.

In selecting the members of an SAE technical committee, the purpose is primarily to secure a group whose technical experience in the aggregate has the breadth needed to deal with the problems facing the committee. Committee members function as individuals and are not appointed nor considered to represent the companies employing them. No attempt is made to balance the membership of the committee among producers, consumers, and general interest groups. Committees make frequent use of consultants on special phases of their problems. Moreover, most of them assign the development of their project to subcommittees and these subcommittees may and commonly do include engineers who are not members of the main committee.

The safeguards in the Board's procedures provide adequate protection for minority viewpoints. While most committee reports have unanimous approval, where there is a minority viewpoint, or where consultants take exception to the report, complete information on these objections must accompany the report when transmitted for Technical Board approval, so that it can review the situation. Moreover, in the ballot of the Technical Board, if any member disap-

(*Continued on page 48*)

Another major program of the Society is its National and Section Meetings at which technical papers are presented in all the design, manufacturing, and operation areas of the membership's interests. During 1949 there were 10 National Meetings at which more than 150 papers were presented. The 38 SAE Sections and Groups produce something like 200 additional technical papers at their local meetings, usually held every month except during the summer. Larger Sections hold several such meetings a month.

For papers of outstanding merit the Society makes annual awards of the Manly, Wright Brothers, Horning, and Beecroft Memorial awards. Recipients are chosen by four separate committees of experts in various engineering fields.

Prepared for STANDARDIZATION by the Society of Automotive Engineers.

Where Should S
Fit Into an I

THE RCA Victor Division has four separate product departments, each having its own engineering and manufacturing functions with the necessary sectional subdivisions, and each concerned with the operating peculiarities characteristic of the nature of its products.

In this arrangement the major standardizing effort is established and applied in engineering, due to the natural emphasis required in the electronics industry on product design and materials. However, as a tool for efficient, economical operation, standardization has become indispensable in every phase of the manufacturing operations. First, the Engineering Products Department, the largest of the four departments, in addition to operating as a manufacturing entity, also serves in the capacity of landlord and provides necessary facilities and service in the buildings and facilities commonly used in the main plant.

Chart Shows Organization

The chart (page 36) showing the organization of standardization has divided the various aspects involved in the total manufacturing operation into pre-production functions and services. Generally speaking, estimating, processing, timestudy, production control, and the various production functions develop and utilize various types of standards to an advanced degree. These standards not only facilitate production, but are also used as a basic measure in the determination of costs, establishment of controls, and in the administration of the incentive system as well as the measurement of nonincentive labor.

Standards are used extensively by the estimating groups in the fabrication, commercial, and government portions of the operation. A similar technique is used in estimating the cost of raw materials and parts. Simplified timestudy standards are used to estimate labor costs. Overhead expenses are determined by applying standard overhead rates to direct labor. Anticipated normal variances are also calculated by the use of established standard percentages. In every possible manner, the forms and procedures used are standardized to expedite the flow of shop order information.

In the processing phase, the major responsibility is to develop the most economical way to produce a product and then to formally establish this standard method through the issuance of standard processes. Process standards are being constantly developed and applied wherever possible to facilitate this work and to insure that standard processes result in a real quality product at the proper economical cost. The processing groups cooperate actively with quality, production, engineering, and division standardizing, exchanging experiences and ideas that lead ultimately to constructive, significant developments. These developments are widely distributed in the form of "Standard Shop Practice" sheets or Engineering Products Department "Shop Instructions."

On occasion, standards may not be written up in a formal manner but may be adopted and applied by processing personnel.

For example, the same type of small tools, such as screw drivers, pliers, and soldering irons, are normally used in all of the assembly sections. This is also true in the case of small machine tools used in fabrication operations. The paper work forms are standardized, as is the processing procedure; this combination makes for simplification on the assembly and fabrication floors.

Gives Data for Policy Decision

Attention to details as outlined above under processing and estimating are important because an estimate correctly compiled and intelligently applied can provide necessary background information of inestimable assistance in the determination of policy decisions. It can, on occasion, be used to replace techniques ordinarily used to segregate and control costs. Some of the valuable uses of this standard information are:

(a) May be used as basis in bid determination.

(b) May be used as guide on short order customer design jobs.

(c) Provides necessary information for management review; for example, in determining the desirability of manufacturing a new product. Manufacturing cost of the product has to be known prior to analysis of potential market, and other factors. This same information may be used in manufacturing decisions to build or purchase component portions of an equipment.

(d) Provides for selection of alternate methods or designs.

(e) Is needed by accounting personnel to supplement information required in billing, charging to sales, purchasing, etc.

Standards for Timestudy

The chief function of the timestudy group is to establish standard rates (in terms of hours per 1000 pieces) for the various standard operations specified by processing. To reduce the cost of establishing these rates, and to insure a high degree of accuracy and consistency, many elements of work are also standardized. These standard times are then applied whenever possible instead of actually timing the job.

Standard timestudy rates are established for the majority of the direct labor production operations, most of which are on incentive, the rest being on measured daywork. Approximately 70 percent of fabrication rates and 95 percent of assembly rates are based on timestudy standards.

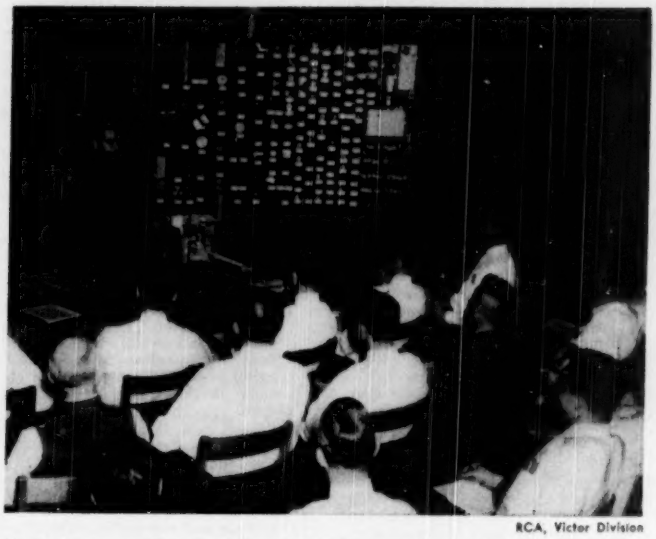
Identical timestudy standards are used throughout the entire manufacturing operation.

Again, standard forms and procedures are used to record information. To insure that standard information is maintained, kept up to date, and applied correctly and consistently, a coordinator is held responsible for the promotion of all necessary timestudy activities. Workshop sessions are held at regular intervals to inform the personnel of this group of changes and developments and to insure (by discussion-presentation) that desirable consistency methods are maintained. Assembly timestudy engineers work with machine shop timestudy engineers in the development of typical

Company standardization is applied in manufacturing concerns in many different ways, depending on the character and organization of the company concerned. Mr Finan, manager of the Training Section, Camden Plant, RCA Victor Division, here describes how his company finds an effective operating relationship between the standards work centered in the engineering department and other operating divisions. This paper was presented before the Company Member Conference during the annual meeting of the American Standards Association, October 1949 held at the Waldorf-Astoria Hotel in New York City. It is reproduced here in part.

Standardization Activity Industrial Organization?

by T. J. Finan



RCA, Victor Division

Illustrating a problem in 16-mm sound film projector, manager of materials handling uses panel showing components tabulated in assembly sequence.

shop operations for group meetings. The advantages of such a plan are obvious.

Another important phase of industrial management is production control. Here, again, we find the same high degree of standardization that prevails in other activities. The ability of the important function of scheduling to perform efficiently depends upon the specific information obtained from timestudy and processing.

In the production function we observe at first hand the application of standard time values. For example, production is controlled and aided by the application of time, process, and quality standards, and the use of standard facilities, materials, parts, etc.

In this landlord department is located the plant engineering function which services all of the department tenants.

The scope and responsibility of this activity may be recognized in the fact that the total Camden Plant area includes some 2,500,000 square feet of floor space in 26 separate buildings. This activity has made substantial progress in compliance with the active demands of the general plant managers' overall program. An examination of these facilities and buildings reveals standardization accomplishments in the following general and specific items:

(1) Color schemes for factory and office painting.
(2) Office and factory partitions.
(3) Industrial lighting fixtures.
(4) Traffic aisle surfacing material.
(5) Air and electric controls for production equipment.
(6) Electric power distribution materials.
(7) Refrigerated drinking fountains.
(8) Door locks and padlocks.
(9) Electric fans, both floor and wall type.
(10) Heating and plumbing fixtures and supplies.
(11) Acid-proof materials for plating departments.
(12) Flooring materials.
(13) Janitor supplies.
(14) Factory and laboratory assembly benches and chairs.
(15) Test cages.
(16) Washrooms.
(17) Window and construction glass.
(18) Office furniture and fixtures.

The standardization of materials and components required in manufacturing is an ever-continuing program. Since the start of the postwar reactivation early in 1947, about 3,000 items suitable for inclusion in the hardware and small parts stores accounts have been standardized. At the present time, some 1,200 items are maintained in stock.

In the wire and cable field about 560 items have been standardized; of these approximately 270 are now carried in stock. Further additions are to be made as firm demands may dictate. It is a policy not to add standard items to stores until at least one manufacturing requirement develops.

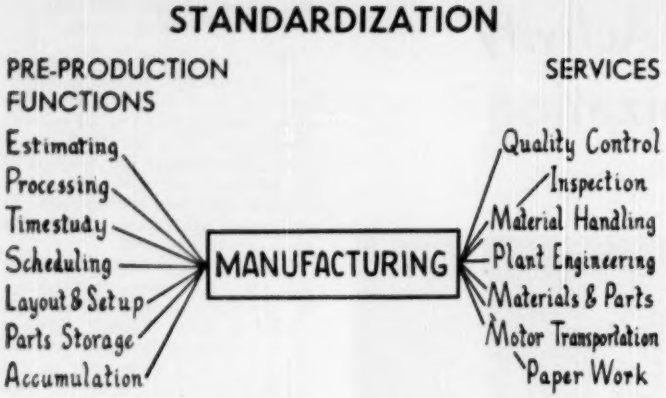
Here, as in many other phases of management, where the principles of standardization are being applied, close coordination between the main effort in the engineering department standards section and the function working on a specific objective is most essential. This cooperative program, jointly sponsored by the material control activity and the standards section of the engineering department, has resulted in the cancellation of thousands of items and on a continuing basis will account for many additional controlled items by the end of 1950.

Another phase of the program has been the development of a procedure involving the release of accumulation sheets to accumulation stockrooms. This provides a flexible mechanism for adequate scheduling of the stockroom load and a joint review with the manufacturing floors to eliminate needless delays and possible material bottleneck situations.

Contributes to High Quality Products

The quality control section of this manufacturing division has always been acutely aware of standardization's contribution to the production of uniformly high quality products. From a quality standpoint, standardization which results in a reduction in the variety of components required to produce the end product, or standardization of methods and practices in the form of written specifications and physical standards, or a combination of both, contributes measurably to the production of quality merchandise.

The full exploitation of standards is conducive to long, uninterrupted, uniform production runs, which in turn permit better planning and in-



spection work, better training of operators and enables the process engineers, as well as other personnel, to concentrate thoroughly in a comparatively narrow area in ironing out rough spots in the overall production operation. This results in the attainment of uniform, acceptable quality. Statistical quality control methods are used when conditions warrant. Additional controls such as sampling techniques and control charts are used as necessary.

In this function we find both quality control and inspection dependent entirely on completely workable standards and specifications. It is impossible to expect that all inspection personnel be thoroughly familiar with the end use of the product. Therefore, they must have available physical standards and written specifications covering characteristics required by the end use. From a quality standpoint standardization should be carried to the point where individual judgment is held to an absolute minimum.

In recent years, industry has placed great emphasis on improved materials handling methods and equipment. This weight is mandatory in the face of the prevailing and ever-increasing competitive market wherein all economy programs that will promote a more favorable position must be employed. In nearly all manufacturing concerns, a good portion of the manufacturing dollar is represented by the direct labor and other direct costs involved in materials handling in all its phases.

Completely aware of the desirability of analyzing and standardizing where possible savings may be achieved, the personnel in this section have developed educational programs, distributed selected information, and used the medium of management conference sessions to indicate objectives, present information, and solicit the cooperation of all levels of supervisory and nonsupervisory personnel. Considerable expense reduction has been accomplished in:

(a) Total materials handling cost.
(b) Greater simplicity in methods.
(c) Greater flexibility and flow in production for increased output.
(d) Reduction in cost variance and material losses.
(e) More flexibility in use of equipment and control of investment in equipment.
(f) Preventive maintenance on handling equipment—planned and expense controlled.

Through cooperative management support and operating supervision acceptance, during 1949 to date, the program of improved materials handling and expense reduction, coordinated with standardization in methods and equipment, contributed substantially to reductions in materials handling and warehousing expense, manufacturing cost variance, and maintenance costs.

In this continuing project, vendor coordination of materials handling and standardization is a rich potential for additional handling expense reduction. It is currently being explored, but still requires additional study. This group, through improved materials handling methods, procedures, and equipment, accomplished definite economies. Among these and under the heading of methods could be mentioned the following:

(a) "Unit" packaging of finished goods in warehouse, reduced handling expense —increased use of cube air space.
(b) Standardization of equipment boxes—based on analysis of quantity handled, and other factors. This resulted in a reduction in previous rework expense, facilitated flow through fabrication to packing section and drastically reduced the expense of internal packaging.
(c) Cabinet rack frames, door, and side panels manufactured in the fabrication section were engineered for a new handling method, using standard inter-locking frame with skid. This innovation reduced both handling expense and cost variance throughout the entire operation.

Before . . . . AND AFTER ⟶

RCA, Victor Division

Standardization in material handling effects savings of time and space . . .

(d) Accumulation of parts from stockroom to assembly lines handled with standard "pallet rack"—reducing floor losses, improving reject control, and reducing handling time in moving as well as reducing replacement and repair expense.

(e) On an item of motion picture equipment—castings and parts have been standardized from a handling standpoint to protect parts and sub-assemblies from magnetic dirt, a measure that contributed to the reduction of cost variance.

(f) An improved palletizing technique used in moving finished goods between warehouses facilitated physical inventories and through this standard method increased the general efficiency of the warehouse operation.

Another responsibility of the "landlord" division is observed in the trucking operation. Standardization has here again been successfully utilized in the program to attain maximum economical operating efficiency. The standards set down for each category are as follows:

Shuttle or Schedule

(1) Regular routine movements of miscellaneous material between buildings.

(2) Straight truck operation.

Full Time Use of Unit

(1) Can be either straight truck or tractor-trailer.

(2) Steady movement of materials between raw stores or components and production lines or to finished goods warehouse.

Tractor-Trailer Operation

(1) Volume movement of material between satisfactory platform facilities which permit the dropping and picking up of trailer equipment.

A complete standard replacement program, one based on accurate maintenance records, is made possible as a result of determination of the point at which upkeep exceeds the cost of replacement.

The standardization accomplished in the current preventive maintenance program, which is the most important part of maintenance, reduces to an absolute minimum the lost time of power equipment due to mechanical breakdowns. This is exceedingly important in an operation such as ours, where our production lines are dependent on the efficient movement of materials from building to building.

It is possible on most occasions to classify training needs on the basis of operating problems caused by people who don't know, can't do, and don't care. However, the leadership, knowledge, and enthusiasm of a general plant manager who is intensely standards conscious, can so stimulate the thinking of his co-workers that they know good standards; are applying standard practices; and are enthusiastically seeking new applications. Formal contests, training sessions, staff meetings, and bulletin releases can be used for this purpose.

A training program that will further assist in the permeation of standards thinking throughout this manufacturing division is a "during hours" fifteen-session course in work simplification for all supervisory personnel in the various sections, such as, production, quality, materials handling, accounting, etc. A major feature of this course will be the work assignments to be completed based on operational activities within the various sections.

Another step was the establishment of a central dispatching set-up so that calls for service, other than those taken care of by the scheduled or assigned operation, could be channeled into the operation with a minimum amount of disturbance, while simultaneously performing an efficient and economical pickup and delivery of materials at the various installations.

This standardization policy has been extended to the selection and adoption of one type of prime mover and one type of trailer equipment. The obvious advantage of this policy is that it permits of a desirable maintenance program, one permitting of a minimum parts inventory. Also, from a driving standpoint, operators can quickly familiarize themselves with equipment characteristics and adjust themselves accordingly.

The standardization accomplishments are not limited to one particular manufacturing division at RCA. All of the other divisions are actively engaged in similar programs varying in size and scope. A noteworthy illustration of the type of active cooperation which successfully characterizes manufacturing - engineering standardization's relationships was evident at a meeting arranged for members of the Anglo-American Council on Productivity late in July. A detailed tour of the home instruments television was conducted by the plant manager. Later, a panel discussion was arranged with the plant manager and an engineering representative of standardizing as members. The plant manager's recital of the many and varied types of standardization contributions that had been incorporated into manufacturing processes greatly impressed the visitors, as well as the fact that he constantly sought any meritorious idea worthy of adoption. They were completely impressed with the standardizing - manufacturing relationship of mutual experience and cooperation that eliminated the need to "sell." A similar relationship in all phases of an industrial organization would contribute immeasurably to its success and would realistically support and enhance the major standardizing effort.

RCA, Victor Division

. . . specially developed pallets and interlocking bins solve reserve problem.

To Make an Inspector's

by Arthur R. Spence*

Fafnir Bearing Company, Photo by Ray Granquist

Outside diameter of super-precision ball bearings are checked with an electro-limit two-point gage.

AN inspector often feels like the proverbial fat man—that nobody loves him. In many cases this is due to the fact that, although a specification has been written for the product, there are no definite instructions for the methods of inspection. Consequently, differences of opinion arise between the engineering department, the shop, and the inspector, or possibly even between the supplier and the purchaser. Such a situation may easily occur where the product is to be held within close limits as in the case of antifriction bearings. Therefore, recent action taken by the ASA Sectional Committee on Ball and Roller Bearings should not only be helpful to inspectors, but also should be of inestimable value in increasing understanding among all those engaged in the design, manufacture, sale, and use of antifriction bearings. This action was completion of the new American Standard Gaging Practices for Ball and Roller Bearings, B3.4-1950, which has just received aproval by the American Standards Association.

Developed to provide simple, clearly understood methods of determining whether bearings conform to dimensional standards, this American Standard is recommended as a reference for settling the disputes that are inevitable when checking a product as complex, and built to tolerances as small, as are antifriction bearings. It is not claimed that it provides the only methods of inspecting bearings or even that it describes the best method for any particular set of circumstances, but any inspector's life should be made easier by the fact that he now can turn to these complete and easily understood reference tests to check his findings.

Gaging antifriction bearings is complicated by a combination of several factors which are seldom fround in other commercial products. The inner and outer rings have relatively thin wall sections and can easily be distorted during measurement (due to its larger diameter the outer ring, particularly, is subject to distortion); predetermined and carefully controlled clearances exist between inner and outer rings, and balls or rollers; important reference surfaces cannot be reached for use as gaging points after assembly of the bearing. Each of these factors has been carefully considered, and the procedures described in the standard have been designed to eliminate the effect of these factors or to reduce these effects to a point where they will not influence the results obtained by the gaging procedure.

Copies of American Standard Gaging Practice for Ball and Roller Bearings, B3.4-1950, can be obtained from the American Standards Association at 50 cents each.

For example, as one means of maintaining uniform results, the standard establishes gaging loads to be applied to the bearing during measurement. Section 4-2.1 specifies loads to be used when measuring inside and outside diameters; sections 4-2.3 and 4-2.4 establish loads to be used when checking radial internal clearance and axial play, respectively. These loads have been calculated to assure that the balls or rollers are seated between the raceways in such a manner as to give repetitive readings and at the same time keep distortion of the rings to a value at which it will have no effect upon the results obtained.

The method specified for checking the outside diameter of the outer ring offers another example of the procedures followed to obtain uniform results. Although it is recognized that this dimension on other objects will probably be checked by a ring gage or by some variation of a ring gage, this standard calls for determining

* *Mr Spence was secretary of ASA Sectional Committee B3 during the development of this standard.*

Life a Happier One —

The ASA Has Approved an American Standard Gaging Practice for Ball and Roller Bearings

the minimum and maximum diameters, the arithemetical average of these two readings to be defined as the "outside diameter." Numerical limits for both the minimum and the maximum diameter are contained in another standard under development by Sectional Committee B3.[1]

The detailed methods of checking, described and illustrated in the new standard, are applicable to each and every dimension of an antifriction bearing that has been standardized and for which tolerances have been established.

In detail, section 4-2 on gaging loads includes tables on bore and outside diameter, radial internal clearance, and axial play gaging loads. Section 4-3 on Inner Ring gives detailed data for determining bore diameter, and tells how to go about measuring the width of the bearings, parallelism of sides, eccentricity, side run-out, and groove parallelism with side.

Section 4-4 on the Outer Ring gives detailed data for determining the outside diameter, and tells how to measure width, parallelism of sides, eccentricity, groove parallelism with side, and outside diameter squareness with side. Section 4-5 covers Internal Fit and includes instructions on how to measure radial internal clearance of single-row ball or roller bearings, and how to determine the extent of axial play. Side run-out of lock nuts is covered in section 4-6. This includes a statement of the tolerances that will be acceptable as well as instructions on how to mount and test the locknut to determine whether it comes within the specified tolerance.

An appendix, which has not been approved as a part of the American Standard Gaging Practices, is included for special use on precision bearings. Provisions of the Appendix include a section on eccentricity of inner ring under axial load, inner ring groove perpendicularly to bore, and eccentricity of outer ring under axial load.

The new American Standard on Gaging Practices is the first standard developed by Sectional Committee B3 to be granted approval by the American Standards Association since the committee was reorganized in 1947 under the sponsorship of the ASA Mechanical Standards Committee. On this occasion the scope of project B3 was revised so as to include, "terminology and definitions of bearings and bearing parts; nominal dimensions of ball and roller bearings affecting their assembly with other machine parts; methods of inspection; shaft and housing tolerances, and selection of fits to suit various conditions; load rating formulas; dimensions of mounting accessories; practice of packaging bearings for domestic use and export." Chairman of the sectional committee is Victor L. Barr, Director of Engineering, Roller Bearing Company of America, who represents the Anti-Friction Bearing Manufacturers Association.

Other Work on Bearings

The American Standard Gaging Practices for Ball and Roller Bearings, B3.4-1949, is only one of the documents which make up a comprehensive standardization program on antifriction bearings under the procedure of the American Standards Association. Subcommittees of Sectional Committee B3 are working on final drafts of Proposed American Standard Tolerances for Ball and Roller Bearings and on Proposed American Standard Boundary Dimensions for Ball and Roller Bearings. A proposed American Standard Bearing Identification Code is near completion by Sectional Committee B54 on Numbering System for Antifriction Bearings. Another standard on definitions and terminology is in an early stage.

It is expected that the tolerance standard will help users to select the proper ball or roller bearings for all types of equipment. Four classes of tolerances are being established for ball bearings, two for cylindrical roller bearings, and one for spherical roller bearings.

The proposed American Standard boundary dimensions provide dimensional interchangeability for bearings as complete components to be used in equipment of various types. Dimensions are given for bearing bores, outside diameters, and for width and fillet sizes on shaft and housing which the bearing corner contours must clear.

[1] Proposed American Standard Tolerances for Ball and Roller Bearings, B3.3.

1950 Conference Officers

New officers of the Conference of Executives of Organization Members of the American Standards Association are:

W. J. Donald, Managing Director, National Electrical Manufacturers Association, *Chairman*

T. E. Veltfort, Manager, Copper and Brass Research Association, *Vice-Chairman*

Members of the Executive Committee of the Conference are:

G. W. Bailey, Executive Secretary, Institute of Radio Engineers, Inc

L. W. Benoit, General Secretary, Manufacturers Standardization Society of the Valve and Fittings Industry

Miss Irene Blunt, Secretary, National Federation of Textiles, Inc

Percy Bugbee, General Manager, National Fire Protection Association

William J. Cronin, Managing Director, Automobile Manufacturers Association

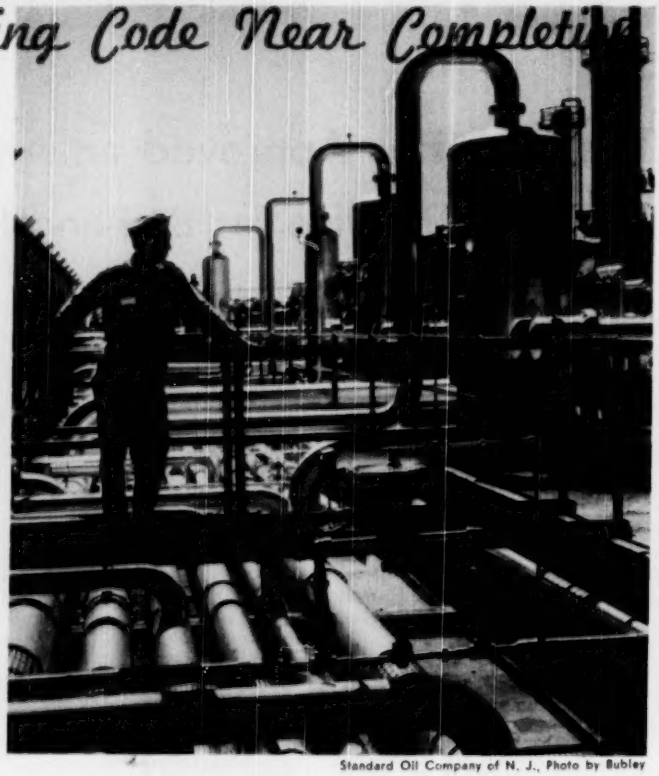
H. C. Wolf, Managing Director, American Gas Association

G. P. Paine, director of promotion of the American Standards Association, remains as secretary.

Pressure Piping Code Near Completion

MANY American Standards have become so well accepted in practice that they are part of normal industrial routine. None have gained wider acceptance than the American Standard Code for Pressure Piping.

The need for a coordinated set of safe and efficient practices for construction and installation of pipe used for high temperature and high pressure service made itself felt in the early 1920's. In 1926, the broad nature of the problem was apparent when as many as 40 organizations accepted the invitation of the American Society of Mechanical Engineers to appoint representatives on a sectional committee to work on a pressure piping code under its sponsorship and through the procedure of the American Standards Association.



Standard Oil Company of N. J., Photo by Bubley

Based on Research

This committee brought out the first edition of the American Standard Code for Pressure Piping in 1935 following seven years of intensive work which included several important research undertakings. One of these was installation of an experimental superheater and piping to obtain information concerning its behavior at 1100 F. In another case a subcommittee made up a manifold with a welded branch connection, and subjected it to hydrostatic tests to determine how much reinforcement was needed for such a construction.

Suitable materials for use in piping carrying high pressures and temperatures was one of the important points for which standard requirements were set up. Dimensional standards and methods of fabrication for the elements making up the piping systems, as well as formulas and requirements for the design of these elements and their supports were also covered. Going further into the problem, the standard gave instructions on how to fabricate and erect piping systems, and how to test the elements before the system was erected as well as how to test the completed systems after erection. This first edition was put to wide use and became the accepted guide to good practice not only for all high-pressure, high temperature use, but for other purposes as well. In the gas industry, for example, efforts to reduce the weight and thickness of cross-country pipe lines have in some cases resulted in court battles between the companies and local safety authorities. In these cases the Code has been referred to as the authority in reaching a decision on what constitutes safe practice.

In 1942 a revision took into consideration many advances in piping practice and made provision for increases in pressure and temperature which had reached new highs during the intervening seven years. The development of air conditioning was recognized in a new section on refrigeration piping, and the increasing use of welded joints resulted in addition requirements for welded construction. In 1944 and 1947 other changes were recognized through the publication of Supplements to 1942 edition.

Continuing increases in the severity of service conditons, with concurrent development of new materials equal to meeting these higher requirements, recently have pointed to the need for more extensive changes in the Code than can be provided by supplements alone. The sectional committee decided, therefore, to produce a completely revised edition of the Code during 1950, with the understanding that a comprehensive revision may follow about 1952.

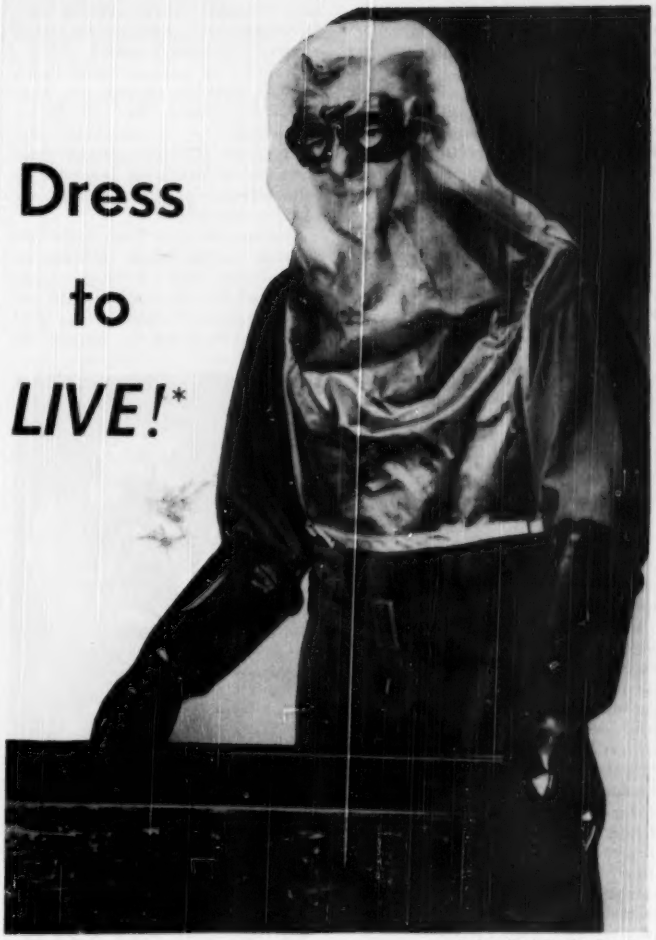
During the first 20 years of its existence, the sectional committee in charge of the Code retained much of the same personnel and operated with a definite continuity. In considering the revision, however, it became apparent that many among the original membership had lost touch with developments in this field. Therefore the sectional committee and its several subcommittees have been reor-

(Continued on page 48)

Officers of the Sectional Committee on Pressure Piping, B31, are:

F. S. G. Williams, Manager Eastern Sales, Taylor Forge and Pipe Works, Chairman
Sabin Crocker, Mechanical Engineer, Ebasco Services, Inc., Vice-Chairman
L. W. Benoit, General Secretary, Manufacturers Standardization Society of the Valve and Fittings Industry, Secretary

Dress to *LIVE!**



E. D. Bullard Co, San Francisco

by Kyle J. Lutz

Safety Engineer
Division of Industrial Safety,
State of California

IT is interesting to delve into man's dim past and speculate about his earliest ideas and means of personal protection.

He must soon have learned the value of the shelter of an overhanging rock, the hollow of a tree, or a cave on a precipitous mountain face. He must soon have learned, too, that in rough mountainous terrain he could better stalk and pursue game if his feet were wrapped in animal skin for protection. He came to use animal skins about his body for protection from jungle and desert growth and from the extremes in temperature.

Today we usually regard clothing as adornment, but its basic value is still primarily for protection.

A microscopic particle flying through the air, a drop of corrosive substance, a projectile, a rivet head, a rock—any of these can ruin or impair an eye. Eye hazards are inherent in almost all industries, and while many of these hazards can be avoided by safeguards, it is not always possible to do so, especially in exposures such as stripping tempered tools, breaking fragile materials, welding metals, or opening vessels and pipe lines which contain or have contained corrosives.

A personal safety device becomes necessary when eye hazards cannot be avoided or eliminated by other means. Such devices are of two main types—face shields and goggles.

In industrial plants we often meet members of the Wise Owl Club, men who saved their sight by using goggles. We also meet unfortunates who failed to qualify for membership in the club. Morbid, bitter, sad, or resigned, they are reluctant to discuss the "accident," which is usually the same old story. They did not know the hazard, or were not informed of it; they had no goggles, or the goggles were too unsanitary to wear; or, most tragic of all, they failed to wear sanitary goggles that were available.

Study and suggestions from industry, research by manufacturers, and the efforts of the American Standards Association and the National Bureau of Standards, have all combined to help develop goggles, eye protectors, prescription lens of safety glass, eyeball covers, and eye shields used in industry today, thus saving the eyes of hundreds of workers each year.

[**Editor's Note:** *Among the 153 safety standards in the American Standard series, 45 provide requirements for personal protective equipment. These include American Standards for protective occupational clothing developed originally for wartime use but now being adapted to peacetime conditions; an American Standard for Protection of Heads, Eyes and Respiratory Organs, which gives specifications for goggles and respirators as well as equipment for face and head protection; requirements for safety shoes developed as American War Standard which are now being reviewed by the committee to determine whether changes are needed to bring them up to date. The belts and fastenings used by window cleaners when they swing out far above the street and the protective equipment used by linemen can be relied on with confidence when they meet the requirements of the American Safety Standards. These American Standards have been developed through the cooperation of the various groups concerned—manufacturers, insurance and safety organizations, representatives of labor itself, and governmental officials.*]

Plants in which safety hats are worn have an enviable safety record. That safety hats should be more generally worn is proved by figures for California for 1948: 16 fatal accidents and 260 severe head injuries, all of which might have been avoided by the use of safety hats.

In California last year, five workers lost their lives and over 300 suf-

* *Reprinted in part with permission of the California Safety News.*

fered lost-time injuries because of the absence or inadequacy of protection from body hazards. (These figures do not include injuries to the head, eye, hand and foot.)

Body safety devices include protective coats, pants, aprons, pads for the knees, or just ordinary clothing suitable for the job performed. An acid treater, welder, brick handler, machinist, and miner, for example, each should wear clothing appropriate for his particular type of work, and, in addition, whatever personal protective equipment is necessary.

An inspection of lockers of pipe fitters at a large refinery disclosed that they each contained from three to six changes of clean work clothing. Such a number of changes was necessary, as it is not unusual for the clothing of these pipefitters to become saturated with flammable liquids or contaminated with corrosive or harmful substances two or three times a day.

Hands Are Important Tools

In an efficient organization, every division functions properly. So too with a worker. His brain, his eyes, his ears must all be sound. But from the chief executive to the new laborer, the hands are the tools that perform the ordinary or specialized operations. As such, they are in closer contact than other parts of the body with the hazards of operation, so it is not surprising that hand injuries form a high percentage of all injuries. While there are numerous safeguards to protect the hands, this high rate of injury proves that more and better safeguards are necessary. Personal safety devices should be used whenever possible when protection against hand hazards is not possible by other means. *Nearly 2 percent of all industrial lost-time injuries would be prevented by the use of adequate safety devices for the hands.*

Gloves, and sometimes palm protectors, are the usual personal protective devices for the hands. Gloves having gauntlets or loose cuffs may give good hand protection, yet introduce the serious hazard of being caught in moving machinery or equipment.

There is the case of a worker using a shovel to fill hand cars on a construction job. The gauntlet gloves he wore protected him from blisters, splinters, and scratches from the rock handled. However, as he dumped the car of rock down a chute, the car overturned forward, catching his glove gauntlet on the dump lever, and throwing him over the car and into the chute to his death. While the causes of the accident unquestionably included faulty safeguarding, the gauntlet gloves themselves played a major role in the tragedy.

A review of hand accidents makes it plain that gloves are not worn nearly as often as they should be. Incidentally, it is significant that most of the 2200 preventable hand accidents in California last year became infected for lack of prompt and efficient first aid.

One out of every four of the foot injuries to California workers are toe injuries, most of which can be prevented by the use of hard-toed safety shoes. Unfortunately, even in industries where toe hazards are great, the majority of workers do not wear such safety shoes. When asked why, the usual answers were:

"Can't get them."
"Can't get proper fit."
"They're not comfortable."

B. F. McDonald Co, San Francisco

An air-line respirator protects worker stirring toxic material.

Another factor is that many workers buy only low-price shoes. Hard-toed shoes are available only in higher-price lines, and the safety toe adds another fifty cents or so to the cost. Some employers who have tried to sell safety shoes to employees at cost, not always with success, may not agree that price is a factor. However, in most of these cases the safety shoes, even at cost, were higher than workers customarily paid for ordinary shoes; and the frequent lack of proper fit and comfort did not add to their attractiveness.

When safety shoes are available in low price ranges in most shoe stores, it is probable that the majority of employees will buy them.

The community dipper for drinking water has been obsolete so long that it probably will reappear soon as a treasure in antique stores.

It can hardly be said that group-shared personal safety devices are, or should be, as obsolete; but they should be thoroughly cleaned and checked after each individual use. Many large industrial plants have highly effective procedures for cleaning, repairing, and sterilizing group-shared personal safety devices, and find it well worth while economically. Accident reduction and increased employee morale are other gains.

Smaller factories might benefit from a similar program. Or they might assign to one person the duty of seeing that sufficient proper and clean personal safety devices are available in the plant. Employees are more likely to wear goggles, gloves, shields, and suitable clothing, hats, and boots where the hazard requires them, if the articles are permanently issued to them or if they are sure the articles are clean and sterile when group-shared. There would certainly be a substantial decrease in the number of accidents caused by personal protective devices being either not available or not used.

Eight workers were killed in California last year because of failure to wear lifebelts with lines attached although the hazards indicated the need. The accidents were of three main types: falling from a height, as out of derricks; burial beneath bulk material in bins and containers; and entering containers or areas low in oxygen or high in harmful vapor or gas.

In one or two cases, the workers used poor judgment. As a rule, however, the lifebelts were either not available or not worn, the latter a fault of supervision.

Even that simple personal safety device, the lifejacket, would, if available and used, have saved the lives of five California workers in 1948.

To summarize, it is obvious that the elimination of the hazard itself is the most desirable means of achieving safety. An example is the substitution of a noncorrosive substance for a corrosive substance.

When this is not practicable, it is sometimes possible to enclose the hazard with full cover guards, or a side or overhead shield guard. Furthermore, the hazard can often be mitigated with point-of-operation guards.

Finally, where necessary, personal safety devices should be used. These should be available, adequate, clean, and most important of all, *used*.

STANDARDIZATION IN BRITISH INDUSTRY

by Andrew Shonfield

Financial journalist and broadcaster on economic subjects for the British Broadcasting Corporation.

ONE of the less expected consequences of the Marshall Plan has been the steady flow of "tourist traffic" in industrialists, technicians, and managers, from Britain to the other side of the Atlantic. Right from the beginning, there has been one over-riding impression which these visitors to the United States have taken away with them—the

simplicity of American production planning and, in particular, the advantages gained by concentration on a small range of standardized products. So much so that when the Anglo-American Council on Productivity met in the spring of 1949, it was decided to send a special group to the United States to study the methods by which its producers had achieved this simplification.

The report on this group's findings has been recently published. It has come at a particularly opportune moment, because another committee, appointed by the United Kingdom Government, to investigate standardization problems in Britain's engineering industries, has published its report at the same time. Taken together, they provide a comprehensive exercise in self-criticism. Both agree there is considerable scope for a further reduction in costs through increased standardization of products. Average United Kingdom performance in this matter falls far short of common American practice.

Need for Aggressive Salesmanship

There are, of course, historical reasons which partly explain this fact. Britain's industry depends on export markets as an outlet for a far higher proportion of its output than does the American, and it has always been difficult to impose standardized products on this variegated collection of customers. However, U. S. experience shows that a reduction in prices resulting from standardization, especially if this is accompanied by aggressive salesmanship, will often succeed in making the customer abroad less imperative in his demands.

Another point is that many United Kingdom industrial enterprises are considerably older than American ones, and have been less flexible in adapting themselves to changing cost factors in the past 25 years. However, that is by no means universally so. An outstanding instance of successful standardization in Britain is the steel industry—one of the oldest of all. In fact, the steel fabricators gave the British Standards Institution its first job when it was set up in 1901. The result was a reduction in the number of types of construction steel from several thousand to 113, and a saving which is estimated

(*Continued on the next page*)

What the Mission Recommended

THE Anglo-American Council on Productivity is made up of representatives of management and labor in the United Kingdom and in the United States of America. The Federation of British Industries, the British Employers' Confederation, and the Trades Union Congress make up the United Kingdom section. Purpose of the council is "to promote economic well-being by a free exchange of knowledge in the realm of industrial organization, method and technique and thereby to assist British industry to raise the level of its productivity."

The mission that visited the United States to study American simplification methods was reported in the September 1949 issue of STANDARDIZATION, page 234. As a result of its visit, the mission was convinced "that an organized and determined effort to reduce our manufacturing variety still further could make a rapid and major contribution to increasing productivity and lowering costs in British industry." The mission recommended that a campaign be launched at once in every industry in which a policy of simplification can be applied.

Specific recommendations to trade associations included:

1. A survey should be made in each industry of the extent to which effort is being dissipated on undue variety.
2. Consideration of the survey should reveal possibilities of simplification, and agreement should be sought and implemented.
3. Steps should be taken to spread among producers and consumers a realization of the benefits of simplification. This understanding should be fostered at all levels from management to the shop floor.
4. Trade associations should stimulate the exchange of information on simplification carried out within each industry and record achievements from time to time.
5. These matters should be made the clear responsibility of a senior officer in each trade association.

The mission also recommended that individual firms make a close study of possibilities of simplification throughout the production process and that all possible action should be taken to reduce unnecessary variety. Producers should endeavor to steer consumer demand towards simplified product ranges by sales techniques, special catalog markings, and by insuring that the special or nonstandard order "carries its full cost, including a proper overhead charge," they urged. Producers should also consider closer collaboration with outside specialist producers and with suppliers of components, stores, and materials in order to make the utmost use of long-run low-cost capacity and simplified and standardized materials.

[**Editor's Note:** In the United States, the low prices, high wages, and high rate of production made possible through the use of standardization and simplification techniques have given this country a level of prosperity unique in world history. Although the prices of standard products in each company may reflect that company's savings from the application of standardization and simplification, it is the opinion of legal experts that it is illegal in this country for standardization to be used as the basis for pricing agreements between companies or on an industry basis. "It is plain from the decisions that you cannot cloak with standardization's mantle of legality a collateral agreement that nonstandards or substandards or superstandards will receive any special price treatment," explains John F. Sonnett, in his article, "The Legal Aspects of Standardization," published in ASA's pamphlet, *What Good Are Standards.*]

British Information Services

Britain has set a goal of exporting more steel products than ever before.

at about five shillings (70 cents) on every ton produced since. The process of simplification has continued more recently and has, no doubt, contributed to the massive increase in productivity in the steel industry that has occurred since World War II.

But, in general, it is Britain's newer industries, such as motors, aircraft, and electrical equipment, which have attacked the problem of reducing costs by standardization with most vigor. In the motor industry, progress in reducing the variety of products has been particularly rapid recently. Ten years ago there were no fewer than 136 different basic automobile models being produced in Britain. Today the number has been reduced to 60. At the same time manufacturers have cut down the number of body variations to about a third of the pre-war figure.

This has been the result of a conscious policy pursued by the industry. It has meant, of course, considerable adjustments in production methods, and one of the factors making for its success has been the steady cooperation of workers and management. However, the business of the motor manufacturer is, to a large extent, a matter of assembling components made by small producers outside his own works, and here there are special problems to be overcome. The small man is sometimes reluctant to specialize and so make himself entirely dependent on the goodwill of a single large customer.

This is not a peculiarly United Kingdom problem. The team sent out by the Anglo-American Council on Productivity found evidence of similar fears among specialist producers in the United States. But the influence of this psychological factor is probably more important in Britain, where an extremely high proportion of total output, particularly in the engineering industries, comes from a large number of small independent enterprises. Nevertheless, so far as automobile components are concerned, there has been considerable progress in standardizing the products of the specialist suppliers.

The Final Proof

Britain's aircraft industry is another branch of manufacture where there is a large element of assembly work on components and parts produced by specialists outside. Here a vigorous drive for standardization was initiated by the Society of British Aircraft Constructors, the parent body of the industry, ten years ago. No item was considered too small or too large for the purpose, and the 5,000-odd parts for which standards have been issued during the period range from the simplest rivet to complicated components like rudder bars. The simplification of production methods made possible not only the vast expansion of output of the war years, but also the postwar economies which have kept the prices of Britain's aircraft low. The industry has now established a large export market for its products, and its sales abroad have continued to grow rapidly during the past year.

Britain's aircraft industry, indeed, provides the final proof—if that were needed—that standardization does not in any way retard technical progress. Indeed, it is precisely in this industry that invention and scientific discovery have been most rapidly translated from the drawing-board to the workshop floor.

But, as previous reports of the Anglo-American Council on Productivity have pointed out, there is, in general, far too large a gap between the best industrial practice in Britain and the average. Indeed, one of the important results of the Council's work has been to focus the attention of the ordinary manufacturer in Britain on the most efficient methods of production already in operation in his own country.

The Committee for Standardization of Engineering Products

[**Editor's Note:** The Committee for Standardization of Engineering Products was appointed by the Minister of Supply in November 1948 to make a study of simplification and standardization programs carried out by manufacturers and users of engineering products and to determine whether the results are satisfactory. The committee was instructed to work with the British Standards Institution.

The report of the committee, issued late in 1949, concludes that a more active program of standardization and simplification is needed and urges use of British Standards Institution facilities. It calls on the Government to encourage the program by requiring the use of British Standards in all purchases not only by Government departments but also by the nationalized industries and suggests that the Government investigate the possibility of revising its taxation system for the benefit of industries putting standardization principles into effect. Companies themselves are urged to encourage the use of standard products by assuring that their commercial and selling policies recognize the savings from standardization and offer standard products on the most favorable terms.

The committee gives a nod of approval to the principle of voluntary agreement in the preparation of standards, and urges that trade associations or other appropriate cooperative bodies should organize their standardization work in conjunction with the BSI.

In order to carry out this proposed extension of the national standards program the committee believes that the British Standards Institution should take a more active part in initiating action for the preparation and coordination of standards and should strengthen and extend its staff and facilities so as to speed up and intensify its work.

An increase in technical staff generally throughout the country is visualized as a result of the changes in production methods to put the standardization and simplification program into effect. Education authorities and industry itself are therefore called on to intensify their efforts in the training of suitable staff to meet the increased demand for trained technical men.]

Albert Caquot, New ISO Head

ALBERT CAQUOT, the man who is famous in France as inventor in 1914 of the celebrated "Caquot Sausage" (oblong observation balloon that baffled the early German air force), and beloved by his countrymen for his engineering contributions both on the ground and in the air, took office on January 1 of this year as new president of the International Organization for Standardization. He succeeds Howard Coonley of the United States, chairman of the ASA Executive Committee, who served in the ISO presidency for a term of three years.

M. Caquot comes to his new ISO post well qualified both as an engineer and a pioneer in standardization. He was appointed a member of the Administrative Council of AFNOR, the French national standards body, upon its formation in 1926 and has taken a very active part in its work ever since. In 1933 he became the AFNOR vice-president and ten years later was elected president, a post he still holds. The high French honor of membership in the Institute was bestowed on him in 1934 when he was elected to the mechanical section of the Academy of Science. He also currently serves the French government in an advisory capacity as a member of the Economic Council and as president of the building materials section of the Modernization and Monet Plan.

While M. Caquot's work with AFNOR began at its inception in 1926, his interest in standardization actually goes back to 1917 when he took part in several technical committees of the Permanent Standardization Commission (CPS). Early national and international success was accorded these committees in the fields of hydraulic binders, metallurgy, aircraft materials, and preferred numbers. It was in these young days of standardization that M. Caquot conceived the idea of applying preferred numbers to all branches of national and international economy.

M. Caquot's work in contemporary standardization is well known. A great number of the French standards were put into their final shape by him. It was he who advocated small test pieces for metal testing, and because of him new types of fatigue testing machines were created.

Paul Caquot, father of the new ISO president, perhaps should be credited with having given his son the first important lesson in modernization of machinery. On their farm near Vouziers the progress-minded father kept agricultural machinery for a period of one year only, at a time when other French farmers thought in terms of using machinery to the limit and allowing it to become obsolete. As early as 1889 the Caquot farm was electrically lighted while even Parisiens were accustomed to seeing gas lamps. At the age of 15, Albert Caquot was improving his father's farm machinery. A short time later he was studying mathmetics at Rheims Lyceum and after competitive examination was admitted to the Polytechnic Institute.

The 1918 French aviation victories were indebted mostly to the work of Caquot because of his solutions to

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ISO

Retiring ISO President

HOWARD COONLEY, retiring president of ISO, is honored throughout the world for his outstanding career in management and his long years of devotion to the democratic ideas represented in the accepted consensus principle of standardization.

Mr Coonley played a major role in standardization activities as early as the first world war when he served as vice-president of the Emergency Fleet Corporation and used standards in speeding the ship production program. As president of the Walworth Company he gave strong support to the development of standards for pipe and fittings, not only helping to build these standards into one of the most effective among industry programs, but also encouraging his industry to cooperate wtih other groups in qualifying these industry standards as American Standards. In this way and as president of the American Standards Association from 1933 to

1935 he had a leading part in building up the national standards program in the United States.

When scarcity of materials during World War II gave standards almost the status of a weapon of war, Mr. Coonley was placed in charge of the conservation, standardization, and simplification work of the War Production Board. So successful was his

(*Continued on page* 51)

Progress Since 1946

General secretariat headquarters in Switzerland

Cooperative relations with other international organizations—International Civil Aviation Organization; International Labor Organization; International Federation for Documentation; International Dairy Federation; United Nations Educational, Scientific, and Cultural Organization

International Electrotechnical Commission joined as electrical division of ISO

Four new projects added to original 68—total now 72

Preliminary activities by secretariat countries—scopes for committee work developed and organization meetings held

Liaison with the United Nations

Four new member countries—total now 29

Widely increased recognition of importance of standardization as a means of advancing the economies of member countries—particularly those that have suffered severely as a result of World War II

Standards From Other Countries

MEMBERS of the American Standards Association may borrow from the ASA Library copies of any of the following standards recently received from other countries. Orders may also be sent to the country of origin through the ASA office. The titles of the standards are given here in English, but the documents themselves are in the language of the country from which they were received.

For the convenience of our readers, the standards are listed under their general UDC classifications.

536.5 Temperature Measurement

Germany

Thermometers for Laboratory Use. Explanatory Notes on Standards DIN 12775 through 12783, DIN 12770

Various Types of Laboratory Thermometers, DIN 12775-12783

Poland

Standard Reference Temperature, N-02101

620.191 Surface Defects

Sweden

Surface Smoothness. Micro-Geometrical Deflections. Definitions. Terminology, SMS 671

621 Mechanical Engineering. Fixed and Movable Parts

Argentina

Shaft Height of Machines, IRAM 5031-P

621.3 Electrical Engineering

Argentina

Insulating Oils, IRAM 2026-P

Bituminous Insulating Compound, IRAM 2028-P

Socket Outlet and Plug Without Earthing Pin, for Fixed Installations, IRAM 2033-P

Measurement of High AC Voltages, IRAM 2044-P

Distilled Water for Electric Batteries, IRAM 2061-P

Plugs for Electric Heating Apparatus, IRAM 2065-P

Insulating Varnishes, Test Method of, IRAM 2070-P

General Requirements for Connectors for Electric Apparatus, IRAM 2076-P

Belgium

Rules for Specification and for Acceptance of Rotating Machines, NBN 7-1949

France

Rules Governing Rotating Electric Machines C 4

Rules Governing Fusible Circuit Breaker for Alternating Current of 1000 v and Over Working Voltage, C 108

Israel

Insulating Conduits With Thin Steel Casing, 25T

The Netherlands

Fuses and Fuse Holders. Terminology, N 799

Union of South Africa

Safety Specifications for Electric Radiators, SABS SV 103-1949

Union of Soviet Socialist Republics

Portable Lantern Type AMF-8 Operated by Storage Battery, GOST 4652-49

Basic Letter Symbol Used in Electrical Engineering, GOST 1494-49

United Kingdom

Cables and Flexible Cords for Electrical Equipment of Ships, BS 883-1949

621.43 Internal Combustion Engines, Heat and Other Special Engines Other Than Steam Engines

United Kingdom

Reciprocating Internal Combustion Engines for Marine Auxiliary and Land Service (Excluding Carburetor Type), BS 649-1949

621.6 Apparatus for Conveyance and Storage of Gases and Liquids. Conduits and Pumps

Argentina

Cold Drawn Seamless Copper Pipes, IRAM 2522-P

Seamless Steel Pipes, Carbon- and Molybdenum-Alloy Steel, for Use in Still Installations, IRAM 2531-P

Germany

Diameters of Bolt Holes in Flanges, DIN 2511

Male-Female Flanges, Rolled-in-Type, DIN 2513

Male-Female Flanges, Screw-on-Type, DIN 2517

Flat Screw-on-Type Flanges:—Round, DIN 2555; Oval, DIN 2558; Light, with Collar, DIN 2563

Cocks, DIN 3470

Screw Sockets for Cast Iron Pipes, DIN 2855

Flanges, General Aspect of Types and Sizes, DIN 2500

The Netherlands

Seamless Steel Pipes:—Testing Requirement I, N 417; Testing Requirements II, N 418; Regulations for Testing, N 419

Rumania

Rotary Pipes, Types, Dimensions, Pressures, STAS 68-49

Union of Soviet Socialist Republics

Pipe Fittings of General Use. Marking and Identification Color Code, GOST 4666-49

Cast Iron Water Pipes and Fittings, OST 12523-40

Electrically Welded Steel Pipes, GOST 1753-48

Pumps, Stationary, for Fuels and Highly Flammable Liquids, GOST 4609-49 through 4613-49

United Kingdom

Cast Iron Pipe Flanges and Flanged Fittings, Class 125 for the Petroleum Industry, BS 1575-1949

621.72 Pattern Making. Model Making

Argentina

Color Code for Making Foundry Patterns, IRAM 541-P

Poland

Painting of Mould Patterns, PN H-55205

Switzerland

Color Code for Wooden Patterns, VSM 16500

621.74 Foundry Work. Remelting

Argentina

Gray Iron Castings for Valves, Flanges and Pipe Fittings, IRAM 556-P

Switzerland

Shapes of Light-Alloy Castings. Directions, VSM 14340

621.798 Packing Equipment

France

Wooden Boxes With Vertical Partitions, H 20-004

Germany

General List of DIN Standards Relative to Various Types of Packing Used in German Industry, DIN 55400

Union of Soviet Socialist Republics

Packing Cases for Sewing Machines, GOST 4632-49

S-hooks for Barrels for Fruit and Vegetable Preserves and Fats, GOST 4633-49

Pasteboard Boxes for Food Products, GOST 4634-49

Plywood Boxes for Macaroni and Bakery Products, GOST 4636-49

Wooden Barrels for Meat and Dairy Products and for Frozen Berries and Fruits, GOST 4637-49

Barrels for Preserved Fruits and Vegetables and Fats, GOST 4639-49

Suitcases, GOST 4642-49

Pasteboard Boxes for Cartridge-Type Fuses, etc, Used in Installation of Communication Lines, GOST 4696-49

Wooden Cases for Packing Dry Cell Batteries, GOST 4695-49

Pasteboard Boxes for Capacitors, GOST 4691-49

Plywood Box for Packing of Butter and Margarine, GOST 4600-49

United Kingdom

Introduction to Packaging, BS 1133 Section 1-3:1949

Fibreboard Drums for Overseas Shipment, BS 1596-1949

621.9 Machine Tools. Tools. Operations, In Particular for Metal and Wood

Poland

Sintered Carbide Tools, Various Grades and Applications, PN N-618
Metal-Working Machine Tools. Various Methods for Alignment Tests PN M-55650/1/2; 55654/5/6; 55658; 55660/1/2/3; 5566-5570; 55675; 55677/8/9; 55683/4; 55686-55689; 55692/3
Tool Shanks, Butt-Welded Tools, Reduction Sleaves, Tee-Slots, PN M-55050; 55060; 58700; 60553; 61257
Tool Handles, PN M-62511; 62521
Cold Chisels, PN M-63460; 63508/9
Hammers, Soldering Irons, Pliers, Nail-Pullers, etc, PN M-64080; 64091; 64452; 64472; 64556
Various Shapes and Sizes of Files, PN M-64580; 64620; 64660-64670; 64700; 64702/3
Gas Pipes, Pliers, and Wrenches, PN M-64897; 64972; 65031/2

Union of Soviet Socialist Republics

Friction Power Presses, Screw Type, GOST 713-49
End Milling Cutters With Taper Shank, GOST 4675-49
Various Work-Holding Attachments, GOST 4734-49
Spindles for Polishing Machines, GOST 4791-49

622 Mining

Germany

Main Shaft Hauling Machine Formula for Brakes, DIN 22403
Coal Borers With Hard Metal Bits, DIN 20395

Union of Soviet Socialist Republics

Thermo-Anthracite for Electrodes. Mechanical Test, GOST 4577-49
Cross Section of Mining Galleries for 3- and 5-Ton Wagons, GOST 4684-49, 4685-49
Thermo-Anthracite for Electrodes. Tests for Electrical Resistance, GOST 4668-49

66 Chemical Industry

Argentina

Industrial Xylene, IRAM 1018-P

Poland

Potassium Perchlorate, C-84017
Toluene Industrial, C-97003

Rumania

Sulfuric Acid for Storage Batteries, STAS 164-49
Lamp Black, STAS 101-49
Calcium Carbide, STAS 102-49
Refined Alcohol. Method of Analysis, STAS 184-49

Union of South Africa

Code of Practice Relating to Color Marking and Identification of Medical Gas Cylinders and Anaesthetic Apparatus, SABS 06-1948

Union of Soviet Socialist Republics

Red Phenolic Indicators, GOST 4599-49

United Kingdom

Cast Iron and Enamelled Cast Iron Steam-Jacketed Pans for the Chemical and Allied Industries, BS 186-1949

666 Glass and Ceramic Industry. Artificial Stone

Argentina

Portland Cement, Chemical Analysis of, IRAM 1504-P
Granulometric Analysis of Coarse Aggregates for Portland Cement Concrete, IRAM 1537-P
Aggregates Passing Throng No. 200 Sieve, IRAM 1540-P

France

Laboratory Glassware. Butyrometer for Cream Testing, B 35-035
Special Laboratory Glassware. Ionization Gage, NF B 35-500

The Netherlands

Nomenclature of Plate Glass, N 1301
Thickness and Their Tolerances of Plate Glass, N 1302
Types of Work Done on Plate Glass, N 1303

Rumania

Ceramic Tiles for Indoor Installation, STAS 233-49

Union of Soviet Socialist Republics

Crucibles for Laboratory Use, GOST 4660-49
Chimneys for Kerosine Lamps, GOST 4566-49
Magnesite Products, Highly Fire Resisting, GOST 4689-49
Stove Tiles, GOST 4690-49
W. C. Bowl, Syphon Type, GOST 4766-49

667.6/.8 Paints. Varnishes. Lacquer. Polishing Materials

The Netherlands

Solvents for Lacquers, N 351
Pigments:—Pressian Blue, Test Method, N 885; Gallie and Porrit Method for Determination of Coarse Particles, N 898; Carbon Black and Bone Black, Test Method, N 1531; Aluminum, Test Method, N 1532
Boiled Linseed Oil for Zinc Oxide (Revision), N 598
Tung Oil for Paints (Revision), N 599

Poland

Zinc White, PN C-81015
Bone Black, PN C-81011
Lithopon, PN C-81011

Union of Soviet Socialist Republics

Test Methods of Lacquers and Paints, GOST 4765-49

668.3 Adhesives. Glues. Gelatin

Poland

Skin Glue, PN C-81002
Tar Cement, PN C-97009
Bone Glue, PN C-81003

Rumania

Glue, STAS 89-49

669 Metallurgy

Argentina

Hot Worked Metal Materials, IRAM 109-P
Ferrovanadium, IRAM 550-P
Ferromolybdenum, IRAM 553-P
Sampling of Rolled or Forged Pieces for Analysis, IRAM 585-P
Nickel-Alloy Steel, Method of Chemical Analysis of, IRAM 586-P
Ferrochromium, Method of Chemical Analysis of, IRAM 591-P
Ferro Silicum, IRAM 549-P
Ferro Wolfram, IRAM 551-P
Ferromanganese, IRAM 552-P
Steel Wires. Nomenclature, IRAM 563-P
Cold-Drawn Seamless Brass Pipes, IRAM 2516-NP
Seamless Brass Pipes for Condensers, IRAM 2520-NP

France

Channel Rail for a Suspended Conveyor, NF A45-362
Embossed Sheet Metal, NF E81-051

Poland

Non-Ferrous Materials: Cathode Copper, Copper Ingots, Copper and Brass Hot-Roller, Round, Square and Hexagon Bars, H 04730, 81720, 81725, 87025, 93620/1/2, 93640/1/2, 93730, 93750
Structural Steel, Hot-Rolled Carbon Steel Bands and Bars, H 84021, 92323, 93205

Rumania

Mechanical Tests of Metals. Brinell Hardness Test, STAS 165-49
Bronzes (Copper and Tin) for Machining, STAS 197-49
Aluminum Bronze for Machining, STAS 198-49
Brass for Machining, STAS 199-49
Mechanical Test of Metals. Tensile Strength Test, STAS 200-49
Aluminum Alloy for Machining, STAS 201-49
Brazing Spelter, STAS 204-49
Refined Copper (Thermal or Electrolytic) Classification, STAS 270-49

Union of Soviet Socialist Republics

Cobalt, GOST 123-49
Cast Iron Ingots, GOST 805-49
Copper Bands of General Use, GOST 1173-49
Silicon Nickel Bands, GOST 2170-49
Cemented-Carbide Tips for Cutting Tools. Classification; Assortment, GOST 2209-49
Round Steel Wire, GOST 4605-49
Mercury, GOST 4658-49
Square Rolled Steel Bars. Assortment, GOST 4693-49
Rolled Sections of Special Profile for Steel Sheet Piping; GOST 4781-49
Cemented-Carbide Tips for Cutting Tools. Technical Specifications, GOST 4872-49

676 Paper Industry

Argentina

Sampling and Conditioning Paper and Paper Products for Testing, IRAM 3008-P
Weight per Square Meter and Thickness of Paper, Bristol Board and Pasteboard, IRAM 3009-P
Method of Testing Texture of Paper, Bristol Board and Pasteboard, IRAM 2010-P

Rumania

Kraft Paper, Type B, STAS 82-49
Kraft Paper, STAS 81-49

Union of Soviet Socialist Republics

Parchment of Vegetable Origin, GOST 1341-49
Lightproof Paper, GOST 4665-49

Pressure Piping

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ganized and the various interested organizations have reaffirmed their representatives or designated new ones. Because of the importance of the work, special care was taken to publicize the fact that the committee was being reorganized and that any organization with a substantial interest was entitled to representation. The original committee was almost too large to work effectively, and in reorganizing, smaller working units were set up to carry the load.

The membership of the sectional committee itself, however, constitutes a reasonable cross section of public interest, with the members themselves outstanding in their respective lines. Because of the wide field involved, some 30 to 40 different engineering societies, government bureaus, trade associations, institutes, and the like, have had one or more representatives on the sectional committee, plus a few "members at large" to represent general interests. In addition to active voting members on subcommittees, there are a number of "corresponding members" who receive mailings and may comment if they so desire. The new organization is now functioning smoothly toward getting out a new edition of the Code, which is expected to be ready during 1950.

The scope of this committee's work is indicated in the setup of its subcommittees:

Power Piping Section (Subcommittee 1)
Chairman—E. J. Wiseman, Mechanical Engineer, Stone and Webster Engineering Corporation

Gas and Air Piping Section (Subcommittee 2)
Chairman—H. D. Hancock, President, Gas Advisers, Inc

Oil Piping Section (Subcommittee 3)
Chairman—R. D. Lepley, Engineer in charge of Technical Division, Atlantic Refining Company

District Heating Piping Systems Section (Subcommittee 4)
Chairman—G. D. Winans, Assistant Superintendent of Central Heating, The Detroit Edison Company

Refrigerating Piping Section (Subcommittee 5)
Chairman—A. C. Buensod, President, Buensod-Stacey, Inc

Fabrication Section (Subcommittee 6)
Chairman—G. Sinding-Larsen, Vice-President, Pittsburgh Piping and Equipment Company

Coordination (Editing and Interpretations) (Subcommittee 7)
Chairman—H. A. Wagner, Chief Mechanical Engineer, Engineering Department, The Detroit Edison Company

Materials and Stresses (Subcommittee 8)
Chairman—J. J. Kanter, Materials Research Engineer, Crane Company

Standards and Identification (Subcommittee 9)
Chairman—L. W. Kattelle, Assistant Chief Engineer, Walworth Company

Instrument Piping (Subcommittee 10)
Chairman—R. E. Sprenkle, Hydraulic Engineer, Bailey Meter Company

Liaison with ASME Boiler Code (Subcommittee 11)
Chairman—C. A. Kelting, Assistant Division Engineer, Consolidated Edison Company of New York

Consideration also has been given to the need for another subcommittee to formulate a new section on process piping for the chemical and allied industries. It was concluded, however, that the subject is too complex with respect to pressure, temperature, corrosion, and other chemical reactions to permit formulating a set of requirements at this time that would be of practical value.

Because the Code is so widely used, questions frequently arise about how it applies under special conditions. To answer such questions a procedure has been set up whereby interpretations of Code requirements can be made whenever special problems arise. Inquiries should be addressed to L. W. Benoit, Secretary of Sectional Committee B31, at the address given below.

Note: *A more complete description of the proposed revision of the Code for Pressure Piping is being published in the January issue of* Heating, Piping, and Air Conditioning. *Reprints can be obtained from L. W. Benoit, General Secretary, Manufacturers Standardization Society of the Valve and Fittings Industry, 420 Lexington Avenue, New York, or from the American Society of Mechanical Engineers, 29 West 39 Street, New York 18, N. Y.*

Book Reviews

Standard Methods of Testing Magnetic Materials Revised and Amplified. (American Society for Testing Materials, 1916 Race Street, Philadelphia 3, Pa., $1.00)

This 56-page pamphlet gives the latest revised standard methods for testing of magnetic materials, ASTM A 34, as well as several companion documents including the Standard Definitions of Terms with Symbols, ASTM A 340, and the Specifications for Flat Rolled Electrical Steel, ASTM A 345. The American Society for Testing Materials Committee A-6 on Magnetic Properties has regrouped the various divisions of the older standard A 34 into five new documents. Essentially the methods given in this booklet are a compendium of tests for magnetic, mechanical, and electrical properties of magnetic materials.

New methods in ASTM A 341 cover, for example, ballistic tests for normal induction and hysteresis of magnetic materials. Four procedures for determining the permeability of materials having a permeability not exceeding 2.0 are covered in methods A 342. Methods A 343 have to do with the determination of core loss and alternating current permeability for laminated materials, while methods A 344 cover test procedures for electrical resistivity, interlamination resistance, lamination factor, and ductility.

Modular Coordination. (Housing and Home Finance Agency, Washington 25, D. C., 15¢)

Modular coordination—what it is and how it works in reducing housing cost—is explained for the man-in-the-street in this 20-page illustrated booklet. Copies are available from the Superintendent of Documents, U. S. Government Printing Office, Washington 25, D. C.

The SAE

(*Continued from page 33*)

proves, the report must be held up for reconsideration by the Board in the light of objection.

Equipment Improvements Seen

SAE technical committee activity dates back to the very beginnings of the Society. In peace and war this work has always been an important element in SAE operations and there is no doubt that it has added greatly to the prestige of the Society. It is no exaggeration that every motor vehicle, every airplane and every tractor in service today is in some way a better piece of equipment because of the important work of SAE technical committees.

The Coordinating Research Council, Inc, was organized and is supported by the American Petroleum Institute and the SAE. Many basic and fundamental projects are being carried out on fuels—both gasoline and diesel—on lubricating oils and greases, and on such problems as storage of fuels and vapor locking tendencies of some fuels.

The Society is co-sponsor for seven American Standards Association projects, and is represented on 27 ASA sectional committees.

Thirteen American Society for Testing Materials committees have SAE representation, and there is a joint ASTM-SAE committee on automotive rubber.

Other organizations with which the SAE has active technical committee cooperation are the American Society of Safety Engineers, American Society for Metals, American Foundrymen's Association, National Association of Corrosion Engineers, Radio Manufacturers Association, American Iron & Steel Institute's Technical Committee, the National Research Council, Federal Specifications Board, and the U. S. National Committee of the International Commission on Illumination.

AMERICAN STANDARDS

Status as of January 12, 1950

American Standards Approved Since December 7, 1949

Building Exits Code, A9.1-1949
Sponsor: National Fire Protection Association

Safety Code for Manlifts, A90.1-1949
Sponsors: American Society of Mechanical Engineers; Association of Casualty and Surety Companies

Gaging Practices for Ball and Roller Bearings, B3.4-1950
Sponsor: Mechanical Standards Committee

Cast-Iron Screwed Fittings, 125 and 250 lb, B16.4-1949 (Revision of B16d-1941)
Sponsors: American Society of Mechanical Engineers; Manufacturers Society of the Valve and Fittings Industry; Heating, Piping and Air Conditioning National Association

Methods of Testing Antennas, IRE-1948; ASA C16.11-1949

Methods of Testing Frequency Modulation Broadcast Receivers, IRE-1947; ASA C16.12-1949

Methods of Testing Television Receivers (Monochrome Service, 6-Megacycle Channel), IRE-1948; ASA C16.13-1949

Color Codes: Numerical Values, Decimal Multipliers and Tolerances, RMA GEN-101; ASA C16.14-1949

Preferred Values for Components for Electronic Equipment, RMA GEN-101; ASA C16.15-1949

Vibrating Interrupters and Rectifiers for Auto Radio: Frequency 115 Cycles, RMA REC-113; ASA C16.16-1949
Sponsor: Institute of Radio Engineers

Test Code for Step-Voltage and Induction-Voltage Regulators, C57.25-1949

Step-Voltage and Induction-Voltage Regulators, C57.15-1949 (Revision of C57.15-1948)
Sponsor: Electrical Standards Committee

Household Automatic Electric Storage Type Water Heaters, C72.1-1949
Sponsor: National Electrical Manufacturers Association

Copper and Copper-Base Alloy Forging Rods, Bars and Shapes (ASTM B124-49; ASA H7.1-1949)

Free-Cutting Brass Rod and Bar for Use in Screw Machines (ASTM B16-49; ASA H8.1-1949)

Copper Water Tube (ASTM B88-49; ASA H23.1-1949)

Specifications for Slab Zinc (ASTM B6-49; ASA H 24.1-1949)

Copper Pipe, Standard Sizes (ASTM B42-49; ASA H26.1-1949)

Red Brass Pipe, Standard Sizes (ASTM B43-49; ASA H27.1-1949)

Bronze Castings in the Rough for Locomotive Wearing Parts (ASTM B66-49; ASA H23.1-1949)

Car and Tender Journal Bearings, Lined (ASTM B67-49; ASA H29.1-1949)

Copper-Silicon Alloy Wire for General Purposes (ASTM B99-49; ASA H30.1-1949)

Rolled Copper-Alloy Bearing and Expansion Plates and Sheets for Bridge and Other Structural Uses (ASTM B100-49; ASA H31.1-1949)

Brass Wire (ASTM B134-49; ASA H32.1-1949)

Leaded Red Brass (Hardware Bronze) Rods, Bars and Shapes (ASTM B140-49; ASA H33.1-1949)

Specifications for Raw Linseed Oil (ASTM D234-49; ASA K34-1949)

Specifications for Boiled Linseed Oil ASTM D260-49; ASA K35-1949)
Sponsor: American Society for Testing Materials

Specifications for Protective Equipment for Electrical Workers:

Rubber Insulating Line Hose, J6.1-1950 (Revision of American War Standard J6.1-1945)

Rubber Insulator Hoods, J6.2-1950 (Revision of American War Standard J6.2-1945)

Rubber Insulating Blankets (Without Fabric Reinforcement), J6.4-1950 (Revision of American War Standard J6.4-1945)

Rubber Insulating Sleeves, J6.5-1950 (Revision of American War Standard J6.5-1945)
Sponsors: American Society for Testing Materials; Edison Electric Institute.

Definitions of Terms Relating to Textile Materials (ASTM D123-48; ASA L14.12-1949)

Methods of Test for Asbestos Yarns (ASTM D299-48T; ASA L14.18-1949)

Methods of Test for Woolen Yarns (ASTM D403-48-T; ASA L14.21-1949)

Methods of Test for Worsted Yarn (ASTM D404-48; ASA L14.22-1949)

Methods of Testing and Tolerances for Jute Rope and Plied Yarns for Electrical Packing Purposes (ASTM D681-48; ASA L14.44-1949)
Sponsor: American Society for Testing Materials

Test for Burning Quality of Kerosine (ASTM D187-49; ASA Z11.17-1949)

Test for Neutralization Value (Acid and Base Numbers) by Electrometric Titration (ASTM D664-49; ASA Z11.59-1949)

Test for Oxidation Stability of Aviation Gasoline (Potential Gum Method) (ASTM D873-49; ASA Z11.60-1949)

Test for Congealing Point of Pharmaceutical Petrolatums (ASTM D938-49; ASA Z11.61-1949)

Measurement by Density of Hydrocarbon Liquids by the Pyonometer (ASTM D941-49; ASA Z11.62-1949)

Test for Oxidation Stability of Gasoline (Induction Period Method) (ASTM D525-49; ASA Z11.63-1949)

Test for Existent Gum in Gasoline (Air-Jet Evaporation Method) (ASTM D381-49; ASA Z11.36-1949)

Test for Vapor Pressure of Petroleum Products (Reid Method) (ASTM D323-49; ASA Z11.44-1949)

Test for Knock Characteristics of Motor Fuels by the Motor Method (ASTM D357-49; ASA Z11.37-1949)

Test for Melting Point of Petrolatum (ASTM D127-49; ASA Z11.22-1949)

Test for Color of Refined Petroleum Oil by Means of Saybolt Chromometer (ASTM D156-49; ASA Z11.35-1949)

Test for Sulfur in Petroleum Oils by Bomb Method (ASTM D129-49; ASA Z11.13-1949)

Definition of Terms Relating to Petroleum (ASTM D288-49; ASA Z11.28-1949)

Test for Tetraethyl Lead in Gasoline (ASTM D526-48T; ASA Z11.48-1949)

Test for Saponification Number of Petroleum Products by Color Indicator Titration (ASTM D94-48T; ASA Z11.20-1949)
Sponsor: American Society for Testing Materials

Method for the Pressure Calibration of Laboratory Standard Pressure Microphones, Z24.4-1949

Specifications for Laboratory Standard Pressure Microphones, Z24.8-1949

Method for the Coupler Calibration of Earphones, Z24.9-1949
Sponsor: Acoustical Society of America

American Standards Being Considered for Approval

By the Standards Council—

Letter Symbols for Aeronautical Sciences, Z10.7 (Revision of Z10.7-1930)
Sponsors: American Association for the Advancement of Science; American Institute of Electrical Engineers; American Society of Civil Engineers; American Society of Mechanical Engineers; American Society for Engineering Education

Graphical Symbols for Railroad Equipment, Z32.2.5

Graphical Symbols for Heat-Power Apparatus, Z32.2.6
Sponsors: American Society of Mechanical Engineers; American Institute of Electrical Engineers

Shutter Cable Release Tip and Socket With Taper (European) Thread, Z38.7.14 (Revision of Z38.7.14-1942)

Shutter Cable Release Tip and Socket With Straight (American) Thread, Z38.4.6 (Revision of Z38.4.6-1942)

Picture Sizes for Roll Film Cameras, Z38.4.8 (Revision of Z38.4.8-1944)

Requirements for Photographic Wetting Agents, Z38.8.14

Method for Determining Residual Thiosulfate and Tetrathionate in Processed Photographic Papers, Z38.8.25

Lens Aperture Markings, Z38.4.7 (Revision of Z38.4.7-1943)
Sponsor: Optical Society of America

By the Consumer Goods Committee—

Methods of Sampling and Chemical Analysis of Alkaline Detergents (Revision of ASTM D501-46; ASA K60.21-1948)
Sponsor: American Society for Testing Materials

By the Safety Code Correlating Committee—

Safety Code for the Prevention of Dust Explosions in Terminal Grain Elevators, Z12.4 (Revision of Z12.4-1942)

Safety Code for the Prevention of Sulphur Dust Explosions and Fires, Z12.12 (Revision of Z12.12-1946)

Safety Code for the Prevention of Dust Ignitions in Country Grain Elevators, Z12.13 (Revision of Z12.13-1946)
Sponsor: National Fire Prevention Association

American Standards Reaffirmed

Test for Viscosity by Means of the Saybolt Viscosimeter (ASTM D88-44; ASA Z11.2-1944)

Test for Carbonizable Substances in White Mineral Oil (Liquid Petrolatum) (ASTM D565-45; ASA Z11.49-1945)

Test for Carbonizable Substances in Paraffin Wax (ASTM D612-45; ASA Z11.59-1945)

Conversion of Kinematic Viscosity to Saybolt Furol Viscosity (ASTM D666-44; ASA Z11.53-1944)

Sponsor: American Society for Testing Materials

American War Standards Withdrawn

Fixed Paper-Dielectric Capacitors (Home Receiver Replacement Type), C16.6-1943

Dry Electrolytic Capacitors (Home Receiver Replacement Type), C16.7-1943

Simplified List of Home Radio Replacement Parts (Paper and Electrolytic Capacitors, Volume Controls, Power and Audio Transformers and Reactors), C16.8-1943

Volume Controls (Home Receiver Replacement Type), C16.10-1943

Requested by: Institute of Radio Engineers

Allowable Concentration of Cadmium, Z37.5-1941

Allowable Concentration of Styrene Monomer, Z37.15-1944

American Standards Withdrawn

Standard Vacuum Tube Base and Socket Dimensions, C16.2-1939

Manufacturing Standards Applying to Broadcast Receivers, C16.3-1939

Requested by: Institute of Radio Engineers

Standards Submitted to ASA for Approval

Recommended Practice for Mechanical Refrigeration Installations on Shipboard, B59

Method of Rating and Testing Refrigerant Expansion Valves, B60

Approval Requested by: American Society of Refrigerating Engineers

Specifications and Test Procedure for Household Electric Ranges, C71

Approval Requested by: National Electrical Manufacturers Association

Industrial Apparatus Control, C19.1 (Revision of C19.1-1943)

Approval Requested by: American Institute of Electrical Engineers

Places of Outdoor Assembly, Grandstands and Tents, Z20

Approval Requested by: National Fire Protection Association; Building Officials Conference of America

What's Happening on Projects

Electrical Measuring Instruments, C39

Sponsor: Electrical Standards Committee

The new Subcommittee 2, Electrical Recording Instruments, of Sectional Committee C39, held an organizational meeting on December 16, 1949. The subcommittee will begin its standardization work with the consideration of direct-acting electrical recording instruments, with the first work limited to ammeters, voltmeters, and wattmeters only. Two subgroups were appointed to begin the work—one on definitions, and the other on classification and requirements.

H. C. Koenig of the Electrical Testing Laboratories, Inc, is chairman of the subcommittee.

Electric Lamps, C78—

Sponsor: Electrical Standards Committee

A subcommittee of C78 is being formed to recommend standards for the electrical characteristics of starting switches for fluorescent lamps. This group will be designated Subcommittee 3 with G. A. Freeman of the Westinghouse Electric Corporation as the chairman.

Electrical Equipment in Coal Mines, M2—

Sponsor: U.S. Bureau of Mines and the American Mining Congress

A proposed American Standard Safety Rules for Installing and Using Electrical Equipment in and about Underground Coal Mines, M2.1, is near completion by the sectional committee.

Its purpose is to minimize hazards to life and property and it indicates the steps necessary to select, install, operate, inspect and maintain electrical equipment and circuits in order to reduce electric shock, fire, explosion, and other hazards.

Surface as well as underground installations were considered in formulating the rules, and each rule applies equally to both underground and surface installations. The rules do not apply to strip mining operations, however. They are intended to supplement existing Federal and State regulations; however, the provisions of the code are not to be construed as opposing or superseding provisions of the Federal Mine Safety Code or the mining laws of any state.

Dimensional Standardization of Bolts, Nuts, Rivets, and Screws and Similar Fasteners, B18—

Sponsors: American Society of Mechanical Engineers; Society of Automotive Engineers, Inc

As administrative sponsor for Sectional Committee B18, the American Society of Mechanical Engineers announces the distribution for comment of a proposed revision of American Standard for Large Rivets, B18.4-1937.

Button head, high button head (acorn), flat-top countersunk head, round-top countersunk head, cone head, and pan head rivets are covered by this standard. The one major change included in the proposed revision is in dimensions of pan-head rivets to conform to the American Bureau of Shipping and U. S. Navy design.

Copies of the draft of the Proposed Revision of the American Standard for Large Rivets, ½ in. Nominal Diameter and Larger, B18.4, can be obtained from S. A. Tucker, Standards Manager, American Society of Mechanical Engineers, 29 West 39th Street, New York 18, N. Y.

Rayon Fabrics, L22—

Sponsor: National Retail Dry Goods Association

Harold R. Merahn, Sales Promotion Manager and Vice-President of Gertz Department Store, Jamaica, N. Y. has been appointed chairman of a Promotion and Education Committee to coordinate on a national scale advertising, promotion, and education for a program of certification and labeling of rayon fabrics. The educational program will provide information for buyers in department stores, selling personnel of department stores, consumers, and industries producing rayon fabrics which meet the requirements of quality to be established through the ASA sectional committee, L22.

Those who have already accepted membership on the committee are: James Rotto, Sales and Publicity Director, The Hecht Company; Charles M. Edwards, Dean, New York University School of Retailing.

Recommended standards completed by its subcommittees will be considered by the sectional committee at a meeting scheduled for February 15.

Safety Code for Mechanical Refrigeration, B9—

Sponsor: American Society of Refrigerating Engineers

A seventh draft of the proposed revision of the American Standard Safety Code for Mechanical Refrigeration now being circulated to Sectional Committee B9, includes many changes in the sections on pressure vessels and relief devices. A great deal of work has been done to coordinate the draft with provisions of the ASME Boiler Code. Such coordination is a prerequisite to widespread acceptance of the B9 code by enforcement officials, the committee finds.

This proposed revision of the 1939 edition of the code is intended to insure the safe design, construction, installation, operation, and inspection of every refrigerating system employing a fluid which is vaporized and liquefied in its refrigerating cycle, when these systems are used in institutional, public assembly, residential, commercial in-industrial, mixed occupancy classifications.

ALBERT CAQUOT

(*Continued from page* 45)

the problems of heavier-than-air craft, and the lubrication of airplane engines. At that time he was Chief of Military Aeronautics Section. Again in 1938 he was called on to head the National Aeronautics Societies.

M. Caquot's peacetime contributions to his country are perhaps the most fruitful of a notable career. Foreign engineers, as well as Frenchmen, admire his works: the reinforced concrete bridge that greets visitors who arrive in Paris by the East Station; the Sautet dam, highest in Europe; the La Caille bridge in Haute-Savoie with a span of 148 meters, the longest in the world built up without longitudinal reinforcement; the reconstruction of Saint-Nazaire and the engineering of the long pier of Verdon.

A literal translation of the conclusion of a recent French article in praise of Caquot quaintly and specifically illustrates the French pride in his engineering genius: "When the question arises to study how the energy of tide at Mont Saint-Michel could be profitably utilized, or when one contemplates to pierce the Mont-Blanc, one sends for M. Caquot."

STANDARDIZATION

In Two Parts—Part 2 of the February, 1950 issue

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Volume 20 January-December, 1949

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A

B

ABBREVIATIONS

AIEE	American Institute of Electrical Engineers
API	American Petroleum Institute
ASA	American Standards Association
ASESA	Armed Services Electro Standards Agency
BSI	British Standards Institution
CEE	International Committee for Ruling and Checking of Electrical Equipment
DIN	Deutscher Normenausschuss (German Standards Association)
ESC	Electrical Standards Committee
ICI	International Commission on Illumination
IEC	International Electrotechnical Commission
IES	Illuminating Engineering Society
ISO	International Organization for Standardization
MSS	Manufacturers Standardization Society of the Valve and Fittings Industry
NAM	National Association of Manufacturers
NBFU	National Board of Fire Underwriters
NBS	National Bureau of Standards
NCRC	National Consumer-Retailer Council
NDMA	National Door Manufacturers Association
NEMA	National Electrical Manufacturers Association
RMA	Radio Manufacturers Association
SC	Standards Council
USNC	United States National Committee of the International Electrotechnical Commission

American Standards Association, Incorporated
70 East 45th Street New York 17, N. Y.

HOWARD COONLEY

(*Continued from page 45*)

career there that he was sent to China as Donald Nelson's deputy and as advisor to the Chinese Government in setting up the Chinese WPB. For his outstanding job in China, he was awarded the Medal of Freedom by the U.S. Army.

His leadership in standardization in the period between the two world wars and his activities in the War Production Board and in the Combined Production and Resources Board brought him recognition that qualified him as an outstanding American to serve as first president of the new postwar international standards association.

When Mr Coonley took office as president of the International Organization for Standardization in 1946, the new Organization faced the problem of rebuilding the friendly and cooperative relations among national standards bodies that had been interrupted during the war. Under his leadership notable progress has been made and regular exchange of information looking toward the coordination of their national standards has been resumed among the standards associations of 29 countries now members of ISO

As ISO president, Mr Coonley's leadership in the policy-making Council has been a major contribution in bringing about the harmonious and friendly feeling so frequently commented on by representatives of the member countries.

Dr Frank Jewett, Pioneer Electrical Researcher

The death on November 18 of Dr Frank Baldwin Jewett, 70, former president and chairman of the board of the Bell Telephone Laboratories, and formerly a member of the ASA Board of Directors and Electrical Advisory Committee, ended the career of one of the nation's leading electrical engineers. The pioneer researcher, a proponent of the national standardization program, had devoted 40 years to scientific research and invention in the service of AT&T and its affiliated companies. Dr Jewett, who retired in 1944, had joined the engineering staff of AT&T in 1904 and subsequently became vice-president of the company as well as a vice-president of Western Electric Company.

He was president of the Bell Telephone Laboratories from 1925 to 1940 and chairman of the board from 1940 to 1944. He was president of the National Academy of Science for eight years.

Dr Jewett will be particularly remembered in ASA history for his valuable work as chairman of the committee which set-up the procedures leading to organization of the Electrical Standards Committee. Dr Jewett was appointed a member-at-large of the ASA Board of Directors in May 1948, and retired due to illness in April, 1949.

News Briefs

• • New chairman for 1950 of the Society of Automotive Engineers Technical Board is W. S. Graves, vice-president and director of engineering, Packard Motor Car Company. See page 32 of this issue of STANDARDIZATION for a full story on the SAE.

W. S. Graves

• • The sales vice-president of a new type of glare and heat-reducing glass for windshields and sidelights in motor cars announces that the glass "has been field tested and passes the light-transmission requirements of the American Standards Association." Manufacturers claim that the glass excludes infrared rays of sunshine without distortion of vision and reduces the fading of upholstery in motor cars by shutting out a large percentage of ultraviolet.

• • The National Federation of Textiles is planning a canvass of its members to determine their attitude toward the project on end-use standards for rayon fabrics. Work on these standards is now going forward in Project L22 under the procedure of the American Standards Association, sponsored by the National Retail Dry Goods Association. The immediate purpose of the Federation's canvass is to find out the extent to which rayon mills are willing to contribute toward any plans which may evolve for the policing of the standards, it was explained.

• • Uruguay has been welcomed as a member of the International Organization for Standardization. The Instituto Uruguayo de Normas Tecnicas at Montevideo is the national standardizing body.

• • Uniform terminology for reports, documents, and correspondence, particularly for the member agencies of the Federal Inter-Agency River Basic Committee, is furthered by publication of a new Glossary of Important Power and Rate Terms, Abbreviations, and Units of Measurement. The work was done in cooperation with the Federal Power Commission. "Attempt has been made to set up the definitions and abbreviations according to the most commonly accepted usage of the terms in technical circles with careful attention to the American Standards Association and other authoritative sources," the Foreword explains.

• • Coordination of international activities in the sphere of standardization is the subject of a special statement forwarded to the United Nations November 17 by E. A. Pratt, Liaison Officer of the International Organization for Standardization with the UN.

• • Carter Stanard Cole, Assistant Technical Secretary of the American Society for Testing Materials, died in Philadelphia on November 17, following a severe heart attack.

Mr Cole had been a staff member of the ASTM since 1944 and his work was chiefly concerned with the fields of nonferrous metals and alloys, and corrosion. He has held the chairmanship of the Coordinating Committee on Non-Ferrous Metals and Alloys and the secretaryships of the Advisory Committee on Corrosion, the Administrative Committee on Simulated Service Testing, and the ASTM Ordnance Advisory Committee. He was a member of the American Society of Mechanical Engineers, the Society of Automotive Engineers, the American Institute of Mining and Metallurgical Engineers, and the American Foundrymen's Society.

American Standards Check List

No. of Copies	TITLES OF NEW AMERICAN STANDARDS JUST PUBLISHED	Price
..... Z61.1-1949	**Dimensions, Tolerances, and Terminology for Home Cooking and Baking Utensils**	$ .35
	Reviewed in a feature article of STANDARDIZATION, January 1950 issue, this American Standard provides definitions covering top-of-range and baking utensils which are used for home cooking, and specifies the dimensions and tolerances for baking utensils, measuring cups, and spoons. (*Sponsor:* American Home Economics Association)	
	REVISED AMERICAN STANDARDS	
..... B5.1-1949	**T-Slots—Their Bolts, Nuts, Tongues and Cutters**	.45
	One of a series of American Standards for small tools and machine tool elements, this is a revision of a 1941 American Standard, which represented one of the first and most important steps toward interchangeability in the machine tool industry. Provision is made for finished T-slots and bolts only. (*Sponsors:* Metal Cutting Tool Institute, Society of Automotive Engineers, National Machine Tool Builders' Association, American Society of Mechanical Engineers)	
..... C1a-1949	**Supplement to C1-1947, National Electrical Code**	.10
	This 1949 supplement lists changes and additions that have been adopted by the National Fire Protection Association and approved as American Standard. (*Sponsor:* National Board of Fire Underwriters)	
..... C59.20-1949	**Vulcanized Fibre (NEMA VUI-1949)**	.50
	Vulcanized fibre is described and standard grades and colors listed. Dimensions of vulcanized fibre sheets, blocks, rods, and tubes are also listed. (*Sponsor:* National Electrical Manufacturers Association)	
..... K50.1-1949	**Zinc Yellow (Zinc Chromate), Specifications for (ASTM D 478-49)**	.25
	Zinc yellow is defined for composition, and properties and methods of testing are listed. (*Sponsor:* American Society for Testing Materials)	

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